







A Responsive Design Strategy:

Tested in the Centurion Licensing

Department to serve as a National Roll-out

Solution





For my Mom and Dad



Submitted in partial fulfilment of the requirements for the degree Master of Interior Architecture (Professional) to the faculty of Engineering, Built Environment and Information Technology.

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Barker

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertation and theses, I declare that this dissertation, which I hereby submit for the degree Master of Interior Architecture (Professional), is my own work and has not previously been submitted by me for a degree at the University of Pretoria or any other tertiary institution.

I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially the work of my own. Where reference is made to works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and the list of references.

Jánel Lubbe



Project Summary:

Project Description: A Responsive Design Strategy tested to serve as a roll out solution

Programme: Strategic Rebranding of Public Service, Drivers Licensing Testing Centre

Site Description: Single Storey, Industrial typology

Address: Nellmapius Drive, Centurion, Pretoria

GPS Coordinates: 25°53'29.29" S, 29°10'57.75"E

Research Field: Environmental Potential

Keywords: Design Thinking; Behaviour; Service Design; Comfort; Wayfinding; Accessibility; Kit of Parts

Client: Tshwane Licensing Department

Users: Public clientele and Employees of the Tshwane Licensing Department



Acknowledgements:

Mom and Dad, thank you for all your love and encouragement. Thank you for believing in me and carrying me when I couldn't do so myself. You inspire me and are the best role models any daughter could ask for.

Mitch, thank you for being my pillar of strength and always knowing how to cheer me on. Your faith in me means the world to me.

Lara and Mary Jean, thank you for being the very best people in the world. Thank you for all the love, support and encouragement and for always having time for me.

Anneli, this would not have been the same without you. Thank you for being my confidant and always being one step ahead of the rest.

Raymund, thank you for seeing the vision I had and guiding me in the right direction.

Elana, thank you for all your advice and encouragement throughout this whole process.

Catherine, thank you for your new perspective and advice

Aunty Lindy, thank you for the time you made for me and all your help with the editing.

Mpho, thank you for all the early morning prints, for always being available and for your kind supportive words.

Sunica and all the girls in studio '13/'14, thank you for all the fun memories.

All my friends and Family, thank you for understanding the pressures and for supporting me through it.



"No matter what people tell you, words and **ideas** can change the world."

Robin Williams (n.d.)



Abstract

Interior design is more than just the design of spaces. It is the study of human activity, interaction, movement and spatial governance. These result in the user being both emotionally and physically involved in the interior. Therefore interior design also allows for cooperation between building and user. However when this matter of cooperation is overlooked the negative effect falls on the service that the building provides leading to a negative user perception.

User perception is currently not seen as a physical parameter within an interior condition; however it has a big role to play in terms of how public service buildings function. The interior spaces within the current South African public service domain are prone to this lack of cooperation between building and user. As is evident in service delivery, there is no sharing of information between building and user leading to confusion, frustration and an overall negative perception of the work that is being done there.

Many different forms of analysis can be used to determine where these problems lie within the interior. Using elements from other fields of design can add layers of information enriching the design decisions made through the interior design solution.

By overstepping the boundary between Service Design and interior design, the designer delves into a unique understanding of the processes and associated problems within the service delivery, and through this understanding a more informed spatial solution can be developed.

Information visualization and interior design work hand in hand as an instrument in presenting both problems and solutions in a way that the layman can understand. In an industry where information is lacking, finding new streams of portraying it could change user perception in a positive way.

The investigation of this problem will unfold in the Tshwane Licencing Departments. Four sites within this study will be investigated namely, Centurion, Waltloo, Akasia and Rayton traffic departments. These sites will be analysed to decipher the core problems that they share. The Centurion Licencing Department will be the site used to develop and test the proposed interior intervention. This site is an example of an interior with a lack of cooperation due to its misuse of interior space, lack of wayfinding, circulation and non-existent identity.

Through efficiency, pleasant experience and providing the user with all the information needed to complete the process should allow for a cooperative interior and therefore a change in perception. Interior Design becomes the instrument to realise pleasant-efficiency for service delivery. Even though Interior Design has no control over the administrational aspects of service delivery, it can shape the platform on which it is delivered having a positive influence on both user and service provider.



Ekserp

Binne-ontwerp is meer as net die ontwerp van lokale en ruimtes. Dit is die studie van menslike aktiwiteit, interaksie, beweging en die volle benutting van ruimte. Die uitleg en benutting van ruimte moet aan die fisiese en emosionele behoeftes van die gebruiker voldoen. Dit is daarom noodsaaklik dat binnenshuise ontwerp ook voorsiening maak vir die vloei van die gebruiker se daaglikse aktiwiteite in die beskikbare ruimte. Wanneer die vloei en korrekte benutting van ruimte foutiewelik toegepas word, of oor die hoof gesien word, sal dit 'n negatiewe uitwerking op sowel die gebruiker as die diensverskaffer hé.

Gebruikers se persepsie word tans nie gesien as 'n fisiese parameter in die vloei en werking van 'n lokaal nie, maar dit speel nogtans 'n groot rol in terme van hoe openbare geboue funksioneer en diens aan die publiek gelewer word. Die binne ruimte in die huidige Suid-Afrikaanse staatsdiens domein toon oor die algmeen 'n gebrek aan samewerking en benutting van spasie tussen die gebou, diensverskaffer en gebruiker. Dienslewering lei daaronder omdat daar dikwels geen rigtingwysers tussen en binne geboue is en inligtingbordjies met betrekking tot diensverskaffing dikwels ontbreek. Dit kan lei tot verwarring, frustrasie en 'n algehele negatiewe persepsie van die werk wat daar gedoen word.

Verskeie analises kan gemaak word om vas te stel waar die probleemareas in die gebruik en ritmiese vloei van 'n lokaal is. Deur gebruik te maak van ander areas van ontwerp, kan die inligting en vloei van aktiwiteite binne 'n lokaal baie beter uitgebeeld en toegepas word. Dit verryk die vloei en praktiese gebruik van ruimte en elemeneer die negatiewe invloed van wanorde en frustrasie.

Wanneer die grense van dienslewering en binnenshuise ontwerp mekaar oorvleuel, ondersoek die ontwerper die oorsaak van die probleemareas en gepaardgaande oorsake van onproduktiewe dienslewering. Deur hierdie begrip kan 'n meer ingeligte ruimtelike oplossing ontwikkel word.

Inligtingvisualisering en binnenshuise ontwerp werk hand-aan-hand in die aanbieding en uitwys van beide probleme en oplossings op so 'n wyse dat dat 'n leek dit kan insien. In 'n bedryf waar inligting ontbreek, kan nuwe grafiese voorstelle en uitbeelding daarvan gebruik word om gebruikers se persepsie op 'n positiewe wyse te verander.

Die bogenoemde probleme sal in die Tshwane Lisensiekantore geillustreer en ondersoek word. In hierdie studie sal die volgende vier lisensie departemente ondersoek word: Centurion, Waltloo, Akasia en Rayton. Hierdie departemente se funksies sal ontleed word om die kernprobleme wat hulle deel, te identifiseer. Die Centurion lisensie departement sal gebruik word om die voorgestelde ruimtebeplanning en veranderinge te ontwikkel en om te bepaal of dit 'n positiewe uitwerking op die verbruiker sowel as die diensverskaffer het. Die Centurion lisensiekantoor is 'n goeie voorbeeld van gebrekkige gebruik van ruimte. Daar is geen ritmiese vloei en geen rigtingwysers of simbole is sigbaar nie.

Die korrekte gebruik en uitleg van die binneruimte kan vir die gebruiker 'n effektiewe, suksesvolle en aangename besoek verseker. Dit kan 'n verandering in perspektief tot gevolg he.

Die effektiewe gebruik van binneruimte kan die instrument wees om 'n aangename werksomgewing en produktiwiteit te bevorder. Alhoewel die korrekte uitleg en vloei van die binneruimte geen beheer het oor die effektiewe administrasie en flink dienslewering nie, kan dit wel bydra tot die skep van 'n klimaat en omgewing wat die diensverskaffer sowel as die gebruiker postief kan beïnvloed.



Table of Contents:

List of Figures	.xiii
List of Tables	.xiv
+ Chapter 1: Introduction	
1.1 Introduction	2
1.2 The Design Issue 1.2.1 The Real World Problem 1.2.2 The Current Service Paradigm 1.2.3 The Current Service Building Paradigm	4 4
1.3 Context	
1.4 Design Intention 1.4.1 Problem Statement 1.4.2 Research Questions 1.4.3 Deliverables 1.4.4 Objectives of Deliverables 1.4.5 Methodology 1.4.6 Assumptions 1.4.7 Delimitations	12 12 13 14 16
1.5 Definition of Terms	16
+ Chapter 2: Client and Site Analysis	
2.1 Introduction	20
2.2 Part One: Client Analysis 2.2.1 Service 2.2.3 Identity 2.2.2 Administration Processing and Fraud	21 26
2.3 Part Two – Department Analysis	28 29 32

2.3.5 Image Analysis	
2.4 Part Three – The Centurion Licensing Department Analysis	50
2.4.1 Centurion Site Analysis	
2.4.2 Centurion Building Analysis: Observational Framework	
2.4.2.1 Activities	
2.4.2.2 Users and Interactions	
2.4.2.3 Objects	
2.4.2.4 Environments	
2.5 Conclusion	67
+ Chapter 3: Theoretical Premise	
3.1 Introduction	70
3.2 A Theory Overview	70
3.3 The Mehrabian-Russell Model	72
3.3.1 The Arousal Theory	73
3.3.2 Dominance through Disclosure	
3.3.3 How this is relevant to the design language	76
3.4 The Environmental Psychology Theory	77
3.4.1 How this is relevant to the design language	
3.4.1.1 Wayfinding	79
3.4.1.2 Colour	81
3.4.1.3 Lighting	81
3.4.1.4 Form, Pattern and Visual Elements	81
3.5 The Behaviourist Theory	84
3.5.1 How this is relevant to the design language	
3.6 The Theory of Proxemics	86
3.6.1 The Distances in Man	
3.6.2 How this is relevant to the design language	90
3.6.2.1 Hidden Zones in Offices	
3.6.2.2 Hidden Zones in Waiting Areas	
3.7 The Perception of Waiting Theory, the Baker-Cameron Model	92



3.7.1 How this is relevant to the design language92
+ Chapter 4: Concept and Design Development
4.1 Introduction
4.2 Concept Development 98 4.2.1 Deliverables 98 4.2.2 Kit of Parts 98 4.2.3 Plug-in-terior 98
4.3 Concept applied through Design Thinking.1034.3.1 Maintaining Building before Intervention1034.3.2 Plug-in Grid1054.3.3 Timeline/Matrix109
4.4 Approach to Systems
4.5 Approach to Identity.1164.5.1 Intersection not Path.1174.5.2 Identity and Wayfinding.1174.5.3 New brand identity.119
4.6 Conclusion
+ Chapter 5: Design and Technical Resolution
5.1 Introduction
5.2 New Process
5.3 Roll-out Strategy130
5.4 Design Strategy 131 5.4.1 Modularity 131 5.4.2 Activation 133

5.4.3 Disclosure	
5.4.4 Form and Pattern	
5.4.5 New Dimensions	141
5.4 Technical Strategy	145
5.5.1 Lighting	146
5.5.2 Acoustics	147
5.5.3 Electrical	
5,5,4 Materials	
5.5.5 Safety	150
J.J.J Salety	130
5.5 Conclusion	153
Presentation Pages (Digital Fromat Pages 1 - 17)	
+ Conclusion	155
+ List of References	
+ Appendices	

xii List of Figures:

+ Chapter 1:
Figure 1.1. The Public in queue for Public Service (Wallop 2010)2
Figure 1.2. The Perception - Behaviour - Performance equation
Figure 1.3. South African Protesters (Reuters 2014)4
Figure 1.4. Parallel problems between service delivery and service building
Figure 1.5. The Batho Pele Principles do not reflect spatially in the Current Service Building Paradigm6
Figure 1.6. Introduction to Sites in Contextual Framework9
Figure 1.7. Narrowing down the choice of Site/ Client9
Figure 1.8. The Two Types of Users1
Figure 1.9. The Current User Narrative at the Centurion Licencing Department11
Figure 1.10. The Deliverables set out for the Project
Figure 1.11. How the deliverables intend to change the current service building paradigm13
Figure 1.12. Design Thinking's Key Concepts and Outputs(adapted from Young 2010: 5)14
Figure 1.13. Four Key Components of Qualitative Research(adapted from Groat and Wang 2002:176)15
Figure 1.14. General Public Users in queue for

+ Chapter 2:
Figure 2.1. Hello Peter - Customer Feedback and Analysis for the Licensing Department (Nationwide) over the last 12 months. (Hello Peter 2013)21
Figure 2.2. Paper Based Administration systems within the Licencing Department24
Figure 2.3. Sure Pass Test Process (adapted from SAPA 2011)25
Figure 2.4. New Technological Measures to combat fraud (adapted from Moritz 2007 and Baloyi 2005)25
Figure 2.5. Customer contact provides opportunity to enhance emotional connection (Wheeler 2009; Landa 2006)
Figure 2.6. City of Tshwane Brand Identity explained by the designers M. Ngoasheng, B. Phaahla and J. Adendorff (City of Tshwane 2011)27
Figure 2.7. Explanation of the 'Robot' Evaluation Criteria
Figure 2.8. DesignIt - Process for Oslo University Hospital Breast Cancer Ward(Designit n.d.)30
Figure 2.9. DesignIt - The Norwegian Directorate of Immigration (UDI) (Designit n.d.; Slideshare 2013)31
Figure 2.10. Visualizing Palestine's process and works (Visualizing Palestine 2014)32
Figure 2.11. Meeting Structures by Luna Maurer (Klanten 2010:56)33
Figure 2.12. The Touch Points (with map codes)34
Figure 2.13. The 'Robot' Evaluation Criteria34

Figure 2.14. Explanation of Touch Point vs. Evaluation Criteria Analysis35
Figure 2.15. Centurion Touch Point Map40
Figure 2.16. Waltloo Touch Point Map41
Figure 2.17. Akasia Touch Point Map46
Figure 2.18. Rayton Touch Point Map47
Figure 2.19. The Observational Framework (adapted from Martin and Hanington 2012)50
Figure 2.20. Map of Centurion Licensing Department and its surrounds51
Figure 2.21. Site Map of Centurion Licensing Department
Figure 2.22. Photo Board Four Access Points53
Figure 2.23. Photo Board - Materiality, Signage and Landscape54
Figure 2.24. The Existing Processes55
Figure 2.25. The Employee Hierarchy56
Figure 2.26. The Public User57
Figure 2.27. The Public User and Employed Staff per Interval Percentages58
Figure 2.28. The Behavioural Map - Movement and Anger Points59
Figure 2.29. The Permanent and Non-permanent elements
Figure 2.30. The Permanent and Non-permament elements Section



Figure 2.31. Approach to site61	Figure 3.9. Wayfinding Mind Map (adapted from Steinfeld & Maisel 2012)80	Figure 4.2. Marti Guixe's Walk in Progress Instruction Cards (Vernet & De Wit 2007: 151-154)100
Figure 2.32. The Permanent and Non-permanent	,	,
elements 3D62	Figure 3.10. Elements of the Gestalt Theory (First Coast Creative 2011)81	Figure 4.3. Walk in Progress Interior Shots (Camper n.d.; Fashion from Spain 2005)100
Figure 2.33. The Interior Volumes62	(* 5 5 5 5 5 5 7 7	, . , ,
· 9 · · · · · · · · · · · · · · · · · ·	Figure 3.11. Behaviourist stimuli (adapted from	Figure 4.4. Elonah O'Niels Grace Under Pressure
Figure 2.34. The Furniture Layout63	USACE 1997)85	(O'Niel 2009)101
Figure 2.35. Interior Spatial Zones64	Figure 3.12. The Proxemics Micro-cultures (Hall	Figure 4.5. Plug-in-terior Concept Mindmap102
	1966)88	
Figure 2.36. The Number of Users per Area65		Figure 4.6. African Bank Interior Shots at Clearwater
	Figure 3.13. Robert Sommer Experiment: Socio	Mall and Somerset Mall (Clearwater Mall 2009;
Figure 2.37. The amount of Users per Area65	Fugal vs Socio Petal Spaces(adapted Hall 1966)	Someset Mall n.d.)104
	87	
+ Chapter 3:		Figure 4.7. African Bank Store Fronts (Goldfields
onapier o.	Figure 3.14. Proxemic Distances in Man (Hall 19	Mall 2012; Highveld Mall 2012; Mall @ Reds 2014;
Figure 3.1. The Mehrabian-Russell Model	66)88	Mountain Mill Shopping Centre n.d.; Somerset Mall
explained72	,	n.d.; Tyger Valley Centre 2014)104
explained72	Figure 3.15. Productivity and Perception: Where	, ,,, ,
Figure 0.0. From Theory: The Biome Staircese (Ven Der	they meet is where functionality lies89	Figure 4.8. Uptown Kids Retail Store Plans, Sections
Figure 3.2. Fun Theory - The Piano Staircase (Van Der	they meet to where tarrettering needling needling	and Interior Shots (Archdaily 2012)106
Griend 2014; EF College Break 2009)74	Figure 3.16. Hidden Zones in Office Areas90	and menor energy (worldany 2012)
	rigure 5.16. Filaderi Zones in Onice Areas90	Figure 4.9. The Grid Iteration108
Figure 3.3. Fun Theory - Worlds Deepest Dustbin	Figure 3.17. Booth's Interpretation of Socio-	riguic 4.3. The dild liciation100
(Vong 2009)74		Figure 4.10. The Implementation Timeline109
	Petal and Socio-Fugal Spaces: reflected in	rigure 4.10. The implementation filleline109
Figure 3.4. Fun Theory - Bottle Bank Arcade	interior space (adapted from Booth in Ding and	Figure 4.11 The New Coming Categories 110
Realtime Cities n.d.; We are what we do 2012)74	Guaralda 2011: 117)91	Figure 4.11. The New Service Categories110
	Figure 3.18. The Baker-Cameron Model of the	Figure 4.12. The Existing Process indicating shared
Figure 3.5. CCTV Zhejiang Reporter Station Offices	Subjective Wait experience (Baker & Cameron	and variable areas and where crowding occur111
(Good Visual Disclosure) (Dezeen 2014)75	1996)91	and variable areas and where crowding ecodi
	1990)91	Figure 4.13. Iteration of Shared and Variable Services
Figure 3.6. Yandex Offices (Poor Visual Disclosure)	Figure 3.19. Types of Waiting and Personalities	areas within the Licensing Department112
(Nokki 2014)75		areas within the Licensing Department112
	(adapted from Kopec 2012 and van der	Figure 4.14. IEC Voting Process (IEC 2014)113
Figure 3.7. Relevance to Design - Measurable Design	Westhuizen 2010)94	rigule 4.14. IEC voiling Process (IEC 2014)113
Cues76		Figure 4.15 Queue Management Systems (adented
	+ Chapter 4:	Figure 4.15. Queue Management Systems (adapted
Figure 3.8. Environmental Psychology is concerned		from Pinnacle AV 2014)114
with INTERIOR space78	Figure 4.1. The Project Deliverables99	Figure 4.40 CARO lateria Oliviale a
		Figure 4.16. SARS Interior Sketches114



Figure 4.17. Multichoice Interior Shots115	Figure 5.14. Sociofugal/Sociopetal Axis Yard Stick.142	Figure 5.32. Centurion - AnalysisPresentation Page 3 and 4
Figure 4.18. The DLR ART and TEDA identities closely relate to their host identities	Figure 5.15. Office Zones Yard Stick142	Figure 5.33. Demolition Plan (Scale 1:100)
Figure 4.19. Environmental graphics at CIT118	Figure 5.16. Types of waiting areas (adapted from Kopec 2012 and van der Westhuizen 2010)143	Figure 5.34. Ceiling Paint Plan (Scale 1:100)
Figure 4.20. The new Tshwane Licensing Department Logo with the existing principles of the City of	Figure 5.17. Plug in-terior Strategy144	Figure 5.35. New Partition and Door Plan (Scale 1:100)
Tshwane logo119	Figure 5.18. Lighting Strategy145	Figure 5.36. New Floor Finishes Plan (Scale 1:100)
+ Chapter 5: Design and Technical Resolution	Figure 5.19. Acoustics Strategy146	
Figure 5.1. The Process Iteration124	Figure 5.20. Materials Strategy147	Figure 5.37. Centurion - Analysis
		Figure 5.38. Existing Materials Analysis
Figure 5.2. Biometric Process Iteration126	Figure 5.21. Safety Strategy148	Figure 5.39. Other Sites existing sections
Figure 5.3. New Biometric Process127	Presentation Pages:	Presentation Page 5 and 6
Figure 5.4. Test and Collection Iteration128	Figure 5.22. Design Thinking Methodology	Figure 5.40. Plug in-terior Concept Diagram
Figure 5.5. New Test and Collection Process129	Figure 5.23. Project Deliverables	Figure 5.41. Plug in-terior Strategy Diagram
Figure 5.6. An overview of the Design Strategy131	Figure 5.24. Tshwane Licensing Department Sites	Figure 5.42. General Layout Plan (Scale 1:50)
Figure 5.7. Public Office Landscape, Yves Behar and	Figure 5.25. Initial Evaluation Criteria Developed from Sites	Figure 5.43. Section AA (Scale 1:50)
Fuseproject (Dezeen 2013)132	Siles	Figure 5.44. Section BB (Scale 1:50)
Figure 5.8. 99c Plans and Interior Shots (Dezeen 2014)134	Figure 5.26. Touch Points within Building developed from service design principles	Figure 5.45. Section CC (Scale 1:50)
Figure 5.9. Disclosure Polycarbonate Wall137	Figure 5.27. The Touch Point Map Explanation	Figure 5.46. Test Room Detail (Scale 1:20)
Figure 5.10. Optimal Field of Vision138	Figure 5.28. Image Analysis of Sites	Figure 5.47. Seat Details
Figure 5.11. Color Aditivo, Carlos Cruz-Diez (Cruz-Diez 2013)139	Figure 5.29. Project Summary DiagramPresentation Page 1 and 2	Figure 5.48. Exploded Axonometric of Counters
Figure 5.12. Pedestrian Crossing Iteration139	Figure 5.30. Centurion- Existing Section	Figure 5.49. Service Booth Drawings (Scale 1:20)
Figure 5.13. Yelp! Interior Shots (Dezeen 2014)140	Figure 5.31. Centurion - Existing Process	Figure 5.50. Signage Details



Figure 5.51. Service Booth Section and Details (Scale 1:10)	Figure 5.70. Fire Escape Route Plan (Scale 1:100)
Figure 5.52. Service Box Iteration	Figure 5.71. Wayfinding Audit
Figure 5.53. Service Desk IterationPresentation Page 9 and 10	Figure 5.72. Universal Access AuditPresentation Page 15 and 16
Figure 5.54. Plug in-terior Section and Details (Scale 1:20)	Figure 5.73. New Reception Render Figure 5.74. New Waiting Areas Render
Figure 5.55. Instructional Guidelines to Service Box Presentation Page 11 and 12	Figure 5.75. New Service Booths
Figure 5.56. Lighting Strategy Diagram	Figure 5.76. New Cashiers
Figure 5.57. Lighting Plan (Scale 1:100)	Figure 5.77. New Thresholds: Test Reception Presentation Page 17
Figure 5.58. Lighting Plan Legend	+ Appendices:
Figure 5.59. Lighting Analysis New Natural Light	Appendix A: Design Renders
Figure 5.60. Lighting Analysis Existing Natural Light	Appendix B: Final Models Images
Figure 5.61. Acoustic Strategy Diagram	Appendix D: Final Presentation Images
Figure 5.62. Ceiling Plan (Scale 1:100)	
Figure 5.63. Ceiling Plan Legend	
Figure 5.64. Electrical Layout	
Figure 5.65. Service Booth Wiring LayoutPresentation Page 13 and 14	
Figure 5.66. Material Strategy	
Figure 5.67. New Materials Section (Scale 1:20)	
Figure 5.68. Eco Audit on Materials	
Figure 5.69. Safety Strategy	

xvi List of Tables:

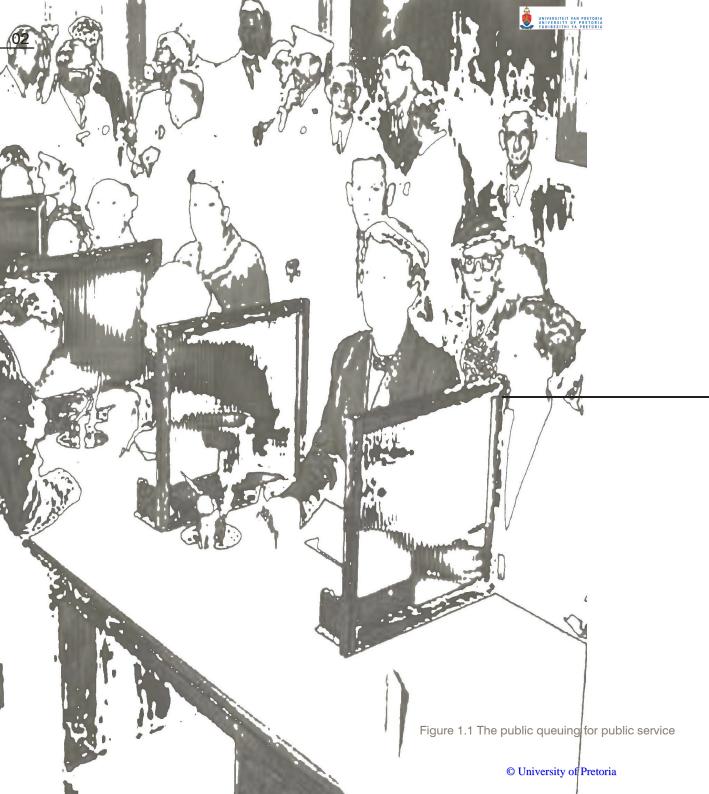
+ Chapter 2:	Table 5.3. Reverberate (LEED 2013: 73)
Table 2.1. Legislation Governing the Context Outline (South Africa Department of Transport 2006; SANS 10400 2011)36	Table 5.4. The absorp
Table 2.2. Centurion Image Analysis38	Presentation Pages:
Table 2.3. Waltloo Image Analysis42	Table 5.5. Approach
Table 2.4. Akasia Image Analysis44	Table 5.6. Service Eq
Table 2.5. Rayton Image Analysis48	Table 5.7. New Lighti
+ Chapter 3:	Table 5.8. Existing Re
Table 3.1. A Theory Overview71	Table 5.9. New Mater
Table 3.2. Colour Table (adapted from Chapman	Table 5.10. Proposed
2010; One Earth One Design 2007; Colour Affects n.d.; Marsden 2011; Peterson 2007; USACE 1997:4.8;	Table 5.11. New Mate
Zorzini 2012)82	+ Appendices:
Table 3.3. Summarised Findings of the Model from Baker-Cameron (1996) (Baker & Cameron 1996)94	Appendix C: Analysis
+ Chapter 4:	
Table 4.1. Approach to Buildings on all four sites105	
Table 4.2. The Grid Iteration107	
Table 4.3. The Design Matrix109	
+ Chapter 5: Presentation	
Table 5.1. Tabulates the Areas, Tasks and Loads	
Table 5.2. Pallet vs Wooden Joist vs Access Flooring	

Table 5.3. Reverberation times that will need to be met (LEED 2013: 73)148
Table 5.4. The absorption coefficients and NRC of New Materials148
Presentation Pages:
Table 5.5. Approach to Buildings Strategy5
Table 5.6. Service Equipment and technology10
Table 5.7. New Lighting Schedule14
Table 5.8. Existing Reverberation Time14
Table 5.9. New Materials14
Table 5.10. Proposed Reverberation Times14
Table 5.11. New Materials Schedules16
+ Appendices:









1.1 INTRODUCTION

"Public services are not a privilege in a civilised and democratic society: they are a legitimate expectation." Department of Public Service and Administration, White Paper on Transforming Public Service Delivery (1997).

Interior design is not only the design of spaces but it is the study of human activity, interaction, movement and spatial governance. This results in the user being both emotionally and physically involved in the interior and by emphasising these factors the interior can be shaped to best serve its function.



If one considers the behaviour of the user as a physical parameter within an interior condition it should have an effect on the way the user performs in and perceives the interior. Therefore, viewing these elements as design parameters within an interior condition could set up a working equation. If behaviour is viewed as a physical design parameter, it follows that changes in performance will result in altered perceptions, and vice versa. There is a large body of research focused on the relationship between the environment and behaviour. however, none of this information is summarised into a form that can be accessed by designers or that can be used in a design process (Deasy 1985:9). Without an understanding of this relationship the effect of behaviour within an interior space could lead from disorganised to disastrous situations (Deasy 1985:9). As Vimolsiddhi Horayangkura (2012:39) advocates "We must invest our full efforts into putting cutting-edge environment-behaviour knowledge at the forefront of architectural design."

When an environment allows cooperation (whether through interior space, with people and/or their attitudes or simplicity of general performance) then it allows users to function and complete their tasks with greater ease and alleviates friction and conflict. User perception and experience within an interior space will influence how they react within that space.

When an interior is uncooperative – an interior space that is not functioning to its full potential in terms of spatial quality, circulation, programme, and ambient quality – the likelihood of the user becoming frustrated, irritated and angry is much higher. This could lead to a negative social interaction with staff and fellow users in that interior, in turn affecting the overall image of the service provided in that building and thus tainting future users' experiences.

Interior design therefore enables cooperation between building and user. However, when this matter of cooperation is overlooked the negative effect impacts the service that the building provides, leading to a negative user perception. User perception and behaviour is currently not viewed as a primary physical parameter within an interior condition, however, it has a big role to play in terms of how public service buildings function. The interior spaces within the current South African public service domain fall victim to this uncooperative relationship between building and user. As is evident in the level of service delivery in South Africa there is a lack of communication between the public and the service provider, which is mirrored through the fact that there is no sharing of information between building and user, leading to confusion.

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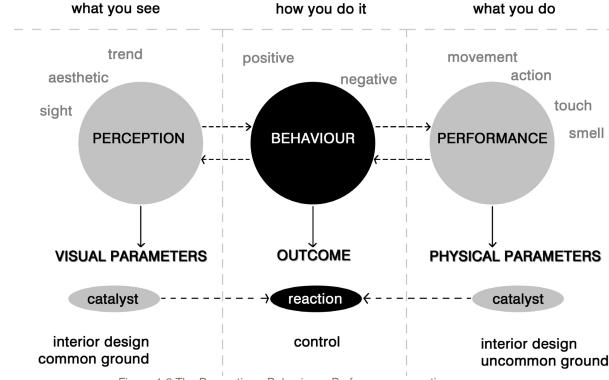


Figure 1.2 The Perception - Behaviour - Performance equation



1.2.1 The Real World Problem:

To state the above problem in a physical context one needn't look much further than the South African public service domain. Currently there is a stigma attached to these public service departments that places an overall negative image on the work that they do. The difference between the public sector and private sector, in terms of service areas that serve the public, is vast. This is not a fair comparison in terms of financial resources, but in terms of function it is valid.

1.2.2 The Current Service Paradigm:

South Africa's public service domain has gone through various steps to rid it of the previous apartheid government's organization. To this end, the Batho Pele initiative, a Sotho Translation for "People First". was launched in 1997 in order to improve public service in South Africa (ETU n.d). It is an approach to get public servants dedicated to serving people and through that to improve public service delivery, "in other words instead of looking for reasons why Government cannot do something, they have to find better ways to deliver what people need" (ETU n.d). In the South African Public Service domain the Batho Pele service principles aim to enhance the accessibility and quality of government services. These principles are expressed in broad terms in order to make them applicable in both national and provincial tiers of Government (DPSA 1997). There are eight principles that need to be delivered:

- 1. Consultation: citizens should be consulted about their needs
- 2. Standards: all citizens should know what service to expect
- 3. Redress: all citizens should be offered an apology and solution when standards are not met

- 4. Access: all citizens should have equal access to services
- 5. Courtesy: all citizens should be treated courteously
- 6. Information: all citizens are entitled to full, accurate information
- 7. Openness and transparency: all citizens should know how decisions are made and departments are run
- 8. Value for money: all services provided should offer value for money

'Many of our municipalities are in a state of paralysis and dysfunction' – The Minister for Cooperative Governance and Traditional Affairs, Sicelo Shiceka (Burger 2009).

Even with these principles in place service delivery problems have reached breaking point and this is evidenced by the amount of service delivery protests. Carin Runciman states service delivery protests have been increasing since 2004 within South Africa (Grant 2014). It is important for these protests to be dealt with in an orderly manner but it is even more important to find solutions to these conditions that cause the problems (Burger 2009). "Urgent interventions in relation to the conditions that bedevil the efficient and effective functioning and service delivery of municipalities are crucial" (Burger 2009). One of these conditions is the poor communication between the municipality and the community and this is reflected in the non-response of municipal governments to communities' concerns (Sebugwawo n.d.). The service buildings fall victim to the same problems as the current service industry and this can be viewed in parallel.

"There is a crucial need for municipalities to prioritise community concerns and creating functional communication channels" (Sebugwawo n.d.).



Figure 1.3 South African Protesters



1.2.3 The Current Service Building Paradigm:

The Batho Pele principles are implemented to keep the standard of service delivery in check. However, if the building does not allow the user ease of use then these principles go unnoticed. These principles should not only be implemented by the public servants but should also be translated into spatial principles that guide the physical organisation and interior design of the service delivery facility.

Public service buildings themselves oppose this vision that the Batho Pele principles consign to the service departments. These buildings fulfil a mono-functional need and due to the lack of connections with their immediate environment and user, they are prone to spatial failures and introspective interiors (Saker 2010:12). These building must meet specified safety standards, but these standards are often implemented at the cost of a welcoming interior and entrance. This in turn creates a non-existent street connection, which to the user is read as a strong, albeit unintended, message of exclusion (Bonta in Saker 2010:14). Existing buildings should more than often be used, as it is not sustainable or feasible to build new buildings within existing urban areas, but often not enough thought or effort is given to the adaptive re-use of the building. These are all factors that contribute to the physical uncooperative nature of the building.

There are too many uncooperative governmental interiors within our country, whether it is due to incorrect adaptive re-use, funding or merely lack of interest. Through improving the state of these interiors we could elicit a positive response from a user, the service given might improve and the resultant image of service delivery may become more positive.

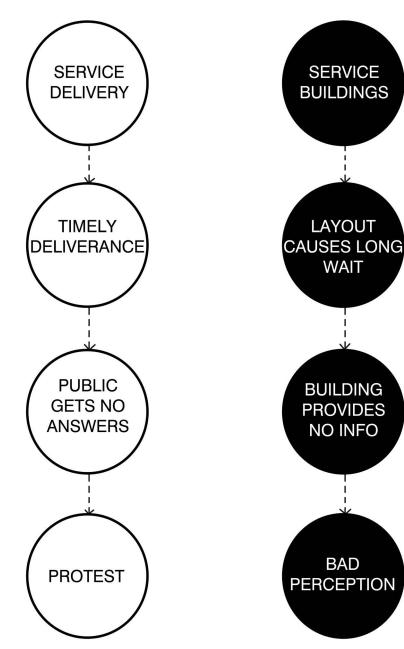


Figure 1.4 Parallel problems between service delivery and service building



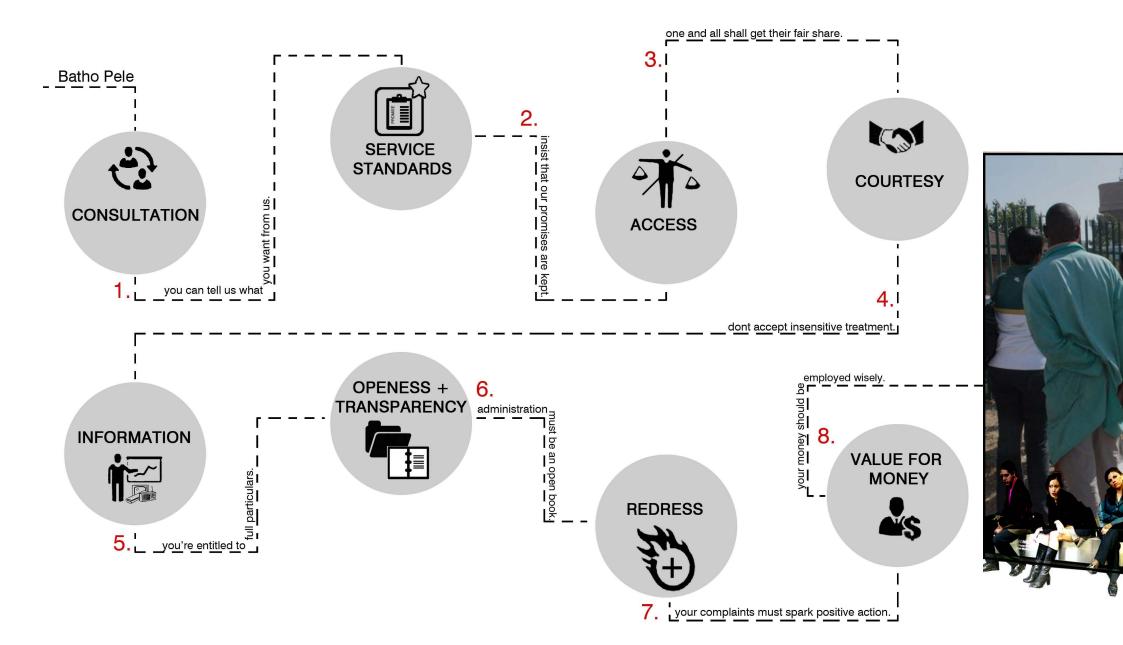
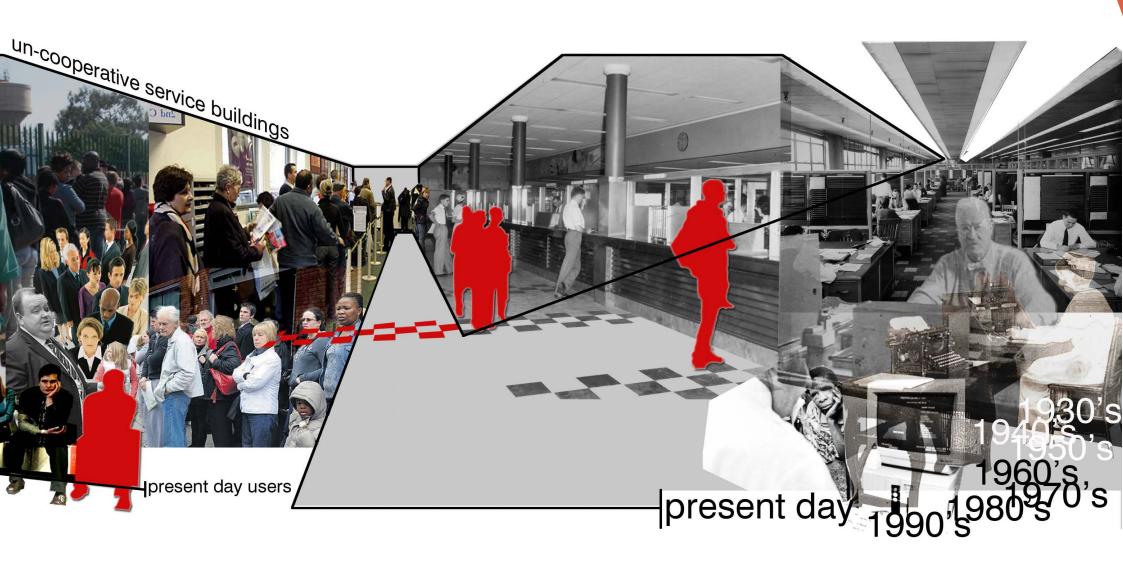


Figure 1.5 The Batho Pele Principles do not reflect spatially in the Current Service Building Paradigm











Nellmapius Drive



WALTLOO



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312 Petroleum Street



c/o Daan de Wet Nel and Willem Cruywagen Street







This study relates to South African public service domain and therefore a site is required that falls within this category. The City of Tshwane Municipality: Tshwane Licensing Department was selected as the client for this study (see Figure 1.7).

Service delivery in the Tshwane Licensing departments is often a sore point as angrily stated by public citizen Stefan De Vos, "I went to Midrand licensing department to go make a booking for my learners licence, I get there and no one can tell me where to go I got sent to four different places at the licensing department before I got to the right place I mean the staff don't even know where what happens there. I eventually got to the counter where I needed to be and the response I get in a very rude way is sorry come back tomorrow at 7am!" (Hello Peter 2013).

The Licensing Department serves as an agent of the province in the administration of drivers and vehicle licensing and they coordinate with the National Department of Transport with regard to legislative matters and national standards for drivers and vehicles roadworthiness, as well as liaises with the National Special Investigations Unit on issues of fraud and corruption (City of Tshwane 2010).

The Tshwane Licensing Department will be used as a service provider in this study/dissertation. Four sites within this study will be investigated, namely, Centurion, Waltloo, Akasia and Rayton traffic departments. These sites will be analysed to decipher the core problems that they share (in chapter two).

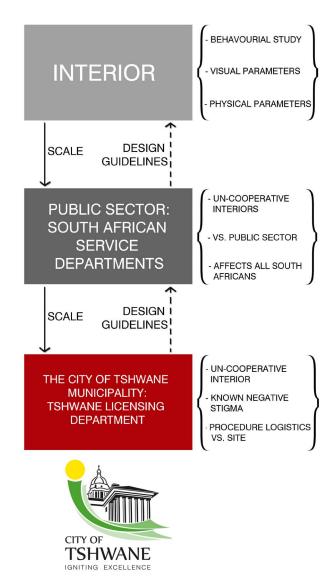
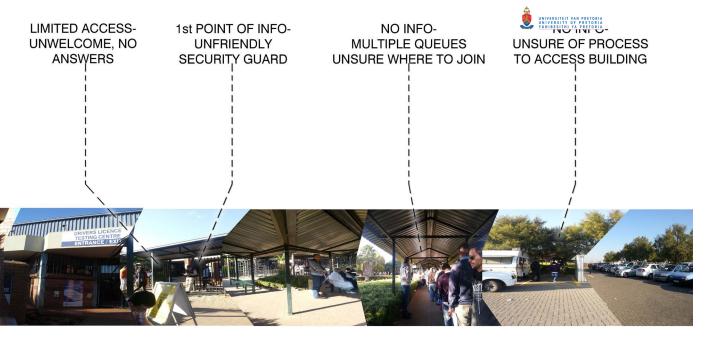


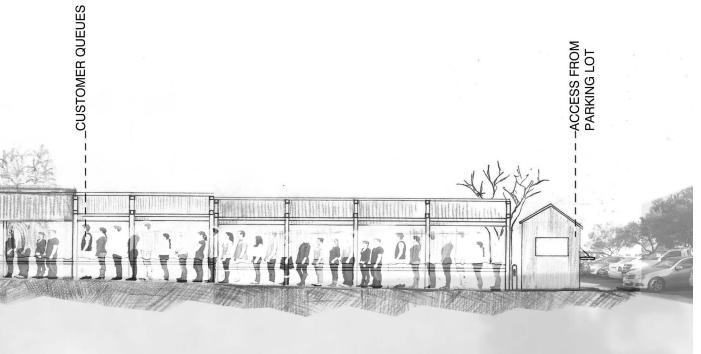
Figure 1.7 Narrowing down the choice of Site/Client

1.3 CONTEXT

Figure 1.6 Introduction to Sites in Contextual Framework (Left)







1.3.1 Case Study: Centurion

The Centurion Licensing Department will be the site used to develop and test the proposed interior intervention. This site is an example of an uncooperative interior due to its misuse of interior space, lack of wayfinding, circulation and non-existent identity.

User:

Users of the building in this study include both the permanent employed staff as well as the visiting public user. The functionality of the interior will need to create a positive environment for both of these users. Through studying the existing circumstances at the branch, the spatial problem can be identified and addressed in the design investigation.

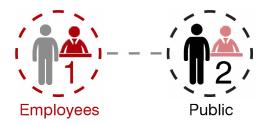


Figure 1.8 The Two Types of Users

Programme:

The existing program will be used as a basis of study to develop an improved program according to the findings of the behavioural process study within the building. An overall goal is to create an environment, through the correct program, that allows users to attain their goals with the least amount of frustration (Deasy 1985:16).



1.4.1 Problem Statement:

At licensing centres there are physical parameters that inhibit cooperation between a service building (environment) and the user (experience), which results in poor service delivery. An interventionist design strategy needs to be developed, including the form of tactical instructions, to mitigate this negative effect.

Design objective:

Through defining the physical parameters that inhibit cooperation between service building (environment) and user (experience) a responsive design strategy will be developed and tested in the Centurion Licensing department to serve as a national roll-out solution.

1.4.2 Research Questions:

- 1. What are the physical parameters that cause an uncooperative relationship between user and building? (How can behaviour be developed into a physical design parameter?)
- 2. What is an appropriate tool to assess the existing service delivery condition?
- **3.** Can the building become a physical information system within the service environment?
- 4. How can design thinking be used to improve systemic problems?
- **5.** Which strategic design interventions will improve service delivery?

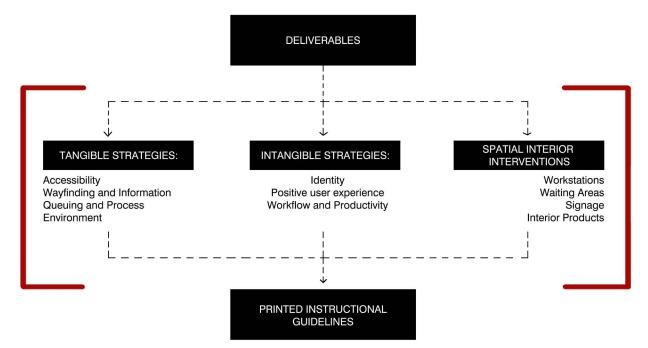


Figure 1.10 The Deliverables set out for the Project

1.4.3 Deliverables:

The design intention is unconventional in the sense that it will not rely on the site but will be an installation within it. Brooker and Stone (2004) have defined installation as the following: "Installation heightens the awareness of an existing building and successfully combines the new and old without compromising or interfering with each other. Installation can be used to make a short sharp shocking statement in the form of a powerful comment." An installation is needed due to the temporal nature of the department buildings and the fact that they cannot close for long periods of time to allow for drastic/interventionist construction to take place.

This design strategy will challenge the boundaries of interior design as it delves into other disciplines such as information design and service design. Accessing the information at these disciplinary crossroads will only strengthen the discipline and prove it to be more than a visually appealing act.

The design installation needs to positively influence the behaviour in the perception/performance equation and through that increase the overall user experience within the service interior. Figure 1.10 indicates the strategies that with will be implemented so that the overall service that the building delivers will improve.

1.4.4 Objectives of Deliverables:

Through understanding the physical parameters that inhibit cooperation between building and user a design strategy for the interior will be developed.

The design strategy aims to firstly devise interior systems and layouts to change the way the service building is currently being used. Through devising these interior systems and layouts it will allow the building to become a physical service provider. It will be a bearer of information allowing ease of use and efficiency, accessibility, identity, and auxiliary services.

Creating alternative the way in which waiting and receiving service occurs and therefore improving the amount of time that the service takes.

Through developing the necessary guidelines for the interior of the Tshwane Licensing Department as the pilot site, these guidelines will be able to be applied to further public service buildings.

Figure 1.11 How the deliverables intend to change the current service building paradigm



1.4.5 Methodology:

Design thinking is a heuristic approach that looks to merge creative design techniques with business techniques to find a balanced systematic solution (IDEO in Young 2010: 5). Design thinking will be the strategy used to investigate the problem and gather the necessary information. Figure 1.12 describes the key concepts of design thinking and how they are going to be implemented.

Qualitative research will be utilised to uncover the realities that are portraved in the real world problem.

"Qualitative research is multimethod in focus, involving an interpretive, naturalistic approach to its subject matter" (Denzin and Lincoln in Groat and Wang 2002:176).

Qualitative research sanctions many different forms of data collection, analysis and reinterpretation methods. These will be used to determine where the problems lie as well as where to find the solutions. These methods include:

- Literature Review:

The literature review will extend the current knowledge

base in terms of the ideals for this study. A review of many different types of sources will uncover the parameters that cause discord between user and building and the counteraction thereof. These sources will provide the answers to the questions asked and serve to guide the design development.

- Precedent Studies:

Precedent studies are an important method used in this investigation as it sheds light on existing projects and processes that can be implemented and applied in interior design. Precedents used in this study offer insights into issues such as service and service

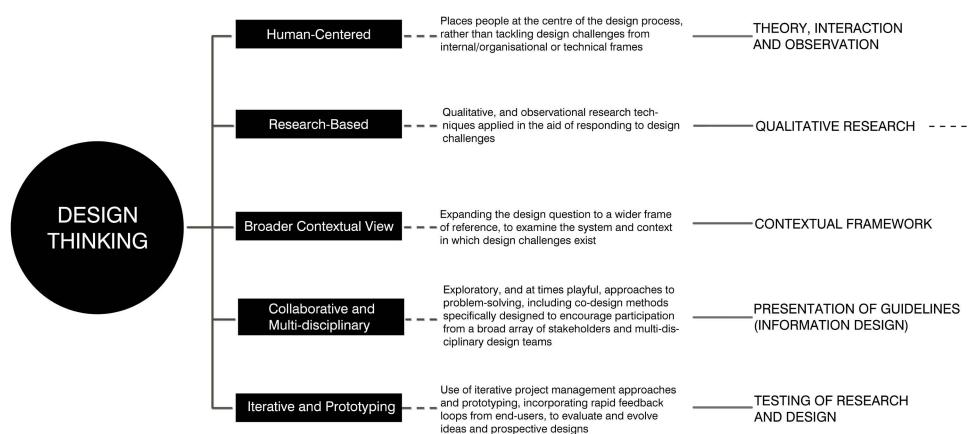


Figure 1.12 Design Thinking's Key Concepts and Outputs



design, information design and human-centred design. Precedents inform the design and technical applications and decisions of this project.

- Semi-Structured Observation:

Non-participant observation is used to collect information while observing the day to day activities at the various sites. An observational framework is a method used to guide the observations to take note of specified key details.

Place-centred behavioural mapping is the documentation of observable characteristics, movements and activities of users at a site specific location (Martin and Hanington 2012: 18). These include all aspects such as user gender and ages, whether the user is alone or with others, what they are doing, how much time is spent at fixed locations

or in transit and the details of the environment context (Martin and Hanington 2012: 18).

- Image Analysis:

"Images and visual experiences are today a central component of our perception, of our experience of reality" (Marotzki, Niesyto in Brandes and Erlhoff 2011:25). Images are used as an instrument to study and interpret the observational findings within this study. Images gather information from an observer's stand point on the day-to-day activity and objects within the studied buildings.

- Case Studies:

Case study research is the exploratory research to understand existing phenomena for comparison, information and inspiration as well as to study the effects of change, new programs and innovations (Martin and Hanington 2012: 28). It is used to gain detailed intensive knowledge of the Tshwane Licensing Departments through multiple methods such as observation and documentation. This method takes a look at the whole and all the interrelated occurrences within it (Martin and Hanington 2012: 28).

- Information Visualization:

Using elements from other fields of design will add layers of information enriching the design decisions made through the interior design solution. Information visualization and interior design work hand in hand as an instrument in presenting both problems and solutions in a way that the layman can understand. In an industry where information is lacking, finding new streams of portraying it could change user perception in a positive way.

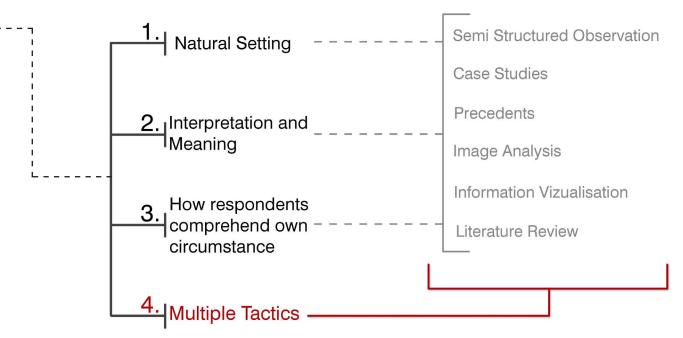


Figure 1.13 Four Key Components of Qualitative Research



The building belongs to the South African government and for this reason there is limited access to the building's drawings. Therefore, informed assumptions will be made based on architectural standards in terms of the existing structure.

1.4.7 Delimitations:

This design project is focused on the relationship between user, space and object in order to organise and improve the efficiency of the building and specific service provider. Therefore the larger administrational service provision issues are beyond the scope of this thesis.

This design project deals with the customer service element of the service and therefore the relationship between service provider and user.





1.5 DEFINITION OF TERMS:

Uncooperative Interior:

Is an interior space that is not functioning to its full potential (in terms of spatial quality, circulation, programme, and ambient quality).

Behaviour of Users:

The behaviour of a user within a space in the context of this project is referring to their reaction and perception due to their experience within an interior space. This reaction is induced by physical aspects and not by elements within a person's nature.

User:

User is a collective term used throughout this project that includes both the **employed staff delivering the service** as well as the **general public receiving the service**. These users are explained in more depth in Chapter 2.



Figure 1.14 General Public Visitors in queue for service





Client + Site Analysis

This chapter serves to introduce the public service department under study. To develop a comprehensive understanding of the Tshwane Licensing Department it will be considered in terms of its administration as well as its physical context. Different methodologies are employed to investigate the Tshwane Licensing Department and this multi-pronged approach is adopted in order to understand the context from different angles and to find an appropriate tool for assessing the existing service delivery condition.

Divided into three parts, this chapter starts with an overview in part one of the administration of the Tshwane Licensing Department. Part two reviews the four sites, Centurion, Waltloo, Rayton and Akasia, of the Tshwane Licensing Department and analyses these in order to identify the departmental buildings' problems. Part three investigates and analyses the project site, the Centurion Licensing Department.

It is important to understand all the systems and elements that make up the Centurion Licensing Department as well as the other sites in order to define what are the physical parameters that cause an uncooperative relationship between user and building.



The Tshwane Licensing Department falls under the management of the Gauteng provincial government. It therefore functions in accordance with the legislation set out by the provincial government.

The Licensing Department serves as an agent of the province in the administration of drivers' and vehicle licensing. The client profile and how the public user perceives the client are key aspects to this study. Understanding how the system functions as a whole is important to propose a holistic solution, which requires an understanding also of the individual parts of the system. Therefore, it is proposed that through studying the client and the administration processes involved it will be clear where changes need to be made.

2.2.1 Service:

The Tshwane Licensing Department is comprised of two divisions, the first is the Registration Authority (RA) and the second, the Driver's License Testing Centre (DLTC). The RA deals with the registration of vehicles and vehicle licences, while the DLTC deals with licensing the individual.

The Tshwane Licensing Department adheres to the Batho Pele principles of service delivery and further it has stated that its service standards are set out as follows:

- Not to exceed a turnaround time of 24 hours for transactions submitted at bulk
- Not to exceed a waiting time of 40 minutes for the public
- Test the learner's licence applicants as scheduled on a daily basis
- · Afford learner drivers to access the practical driving test at the earliest opportunity. (City of Tshwane 2010)

Unfortunately these standards are not being met as well as they should be. Hello Peter is an internet-based platform where clients/customers (service receivers) can lodge complaints and compliments about service providers (both public and private sector). Hello Peter tracks complaints and provides a customer feedback analysis in the form of statistics. Figure 2.1 represents the Customer Feedback and Analysis for the Licensing Department (nationwide) over the last 12 months. This data was collected from March 2013 to September 2014.

The areas in which the most complaints were received are 'bad attitude' and 'other' which include subheadings such as lack of service, lack of call centre assistance, unfair instructors and bribery. A study of the reports reveals 'bad attitude' is attributed to the civil servants' abuse of authority and general bad manners towards the public; whereas complaints in the area 'other' deal with a variety of issues such as civil servants being bribed to help dealers before customers, sending public away to print their own forms, as well as mismanagement within the layout and location of services in the interior that causes members of the public to miss their tests. Figure 2.1 shows excerpts of these complaints.

This customer analysis is done on a nationwide scale, but sifting through these complaints reveals most of the targeted licensing departments are in the Gauteng region. What this highlights is that there is a need to change the public opinion about the work that is being done in the Tshwane Licensing Department and in other municipal/governmental departments.

Figure 2.1 Hello Peter - Customer Feedback and Analysis for the Licensing Department Nationwide 2013-14 (adapted from Hello Peter: 2013) (Next Page)



Been here since 7AM. They are not busy but slow! Queues forming unnecessarily

Mukuka, Langlaagte Licencing Department, 19 Aug '13

Hello Peter: Licensing Department Statistics 2013-14

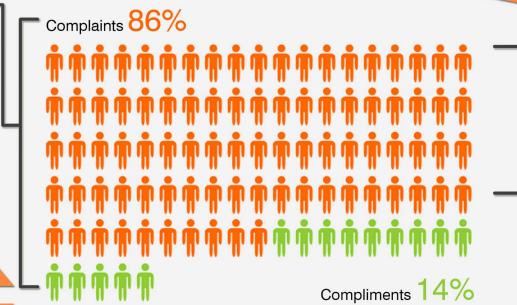
I went to the licensing department this morning in order to renew my driver's license, I was told I need to make photos which I did, I had a certified copy of my id signed and stamped. The offices are poorly structured and maintained. I stood in the queue when a was assisted by a gentlemen, I mentioned I was there to renew my driver's license, I provided him with my certified copy of my ID as well as the photos, he then asked me for my ID which I did not have on me but I produced my driver's license, he then states that he needs my ID as my license had expired, what I cannot understand is that my license had only expired the previous day on the 02/12/2013. This rude person refused to accept the certified copy neither my one day expired license. People don't make the attempt to renew their license and the licensing department gives a dam but me going immediately to have mine resolved I get told this is not what they want. Utterly disgusted with the way the licensing department looks and is run.

Teriska, Xavier Junction Licensing Department, 3 Dec '13

My son went to write his learners today. His booking was for the 11:00am session. I got him there at 10:35. He was seated in the correct area waiting for someone to come and call us, he knows this as 2 month ago both he and I wrote learner for motorbikes and at the session we were called in at 8:00am only. When nobody came, he went and asked the guys at the payment counter at 10:50am... the lady in charge of testing came out and said that he was late and she had called the other people in at 10:15am. She called him a **** when he said he was there at 10:35am and refused to let him write. She was total unaccommodating, arrogant and totally abused her authority. When asked for her name he was ignored and she walked away, and told him he must rebook, another 2 months wait and R120. There were 2 other people there too who were also there around 10:30am, who like my son were refused entry to write (3 people R120). No time was specified on the booking receipt except the session time. If they expect people to be there 1 hour before they write it should be specified.

Ian, Boksburg Licensing Department, 8 Aug '13

After arriving and being seen to at the queries counter you are given a number which doesn't seem to matter as people who are doing licensing or registration for others just seem to cut the queue and go to the tellers where the manager is each time passing money through and handing out numbers to others! So while the rest of us good citizens wait patiently for hours, the manager/person in charge allows for these people to cheat the system! It's a disgrace and if things were just run properly everyone would have their turn in less time!!! Dani, Midrand Licensing Department, 14 Oct '13



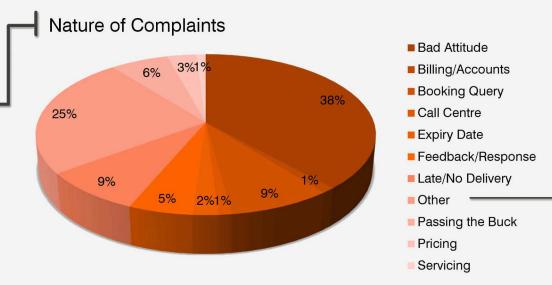
I had to write my learners on the 8/11/13 at 13:00,I arrived at the licence department 12:30 and was waiting in the previous queue which I waited when I came to write. The learners about a month before. When it was 13:15 and I still wasn't in the class, I asked the security if I was at the right place cause I'm supposed to be writing, he said "eish mam they moved the class temporary to another venue", he showed me where the class was and said I should ask the guy inside, I did so, but was told I was late and already marked me absent and that I should take it up with the security as they were supposed to show all the people writing their learners to the class, there I wast sitting in the queue with no signs or anything to show me that I was supposed to go to another class, now I have to come back after wasting a day just to make another booking and pay yet again, This really is not fair.

Samentha, Krugersdorp Licensing Department, 8 Nov '13



Trying to renew your licence is now a day long mission! Standing in a line waiting with no control from the officials, no clear indication of where you to go! Then there is 6 test areas where the eyes are tested and only 2 is working and only 1 cashier out 7 working! How is this good service delivery and how can this be productive for the economy when people have to wait the whole day for something do simple! Well done government one area where you really deliver on all vou ******!

Herman, Akasia Licensing Department, 14 Jan '13



I went to the licensing centre on Uitsig/ Nellmapius road in centurion to renew my license. I stood in line in the queue that I was directed to and a member of their staff came through with a stack of papers which I assumed were the forms we needed to fill. I informed her that I wished to renew my license, she then asked me where my forms were. I told her that I had none and asked if she could direct me to them so that I could fill them out. I was taken aback when she informed me that they had no forms and had not had them for months because according to her, the City of Tshwane has no money to be able to provide them. I then asked for the site from which I needed to download them and she had no idea. One of the patrons there renewing his own license had to inform me to download it of the eNaTis site. I find it highly unacceptable that a government department can't provide essential forms and has uninformed staff who cannot provide basic information.

Ash, Centurion Licensing Department, 13 May '13

My wife and I booked our motorcycle learners test more than 3 weeks ago at the Rayton Vehicle License Dept. We were excited and happy to have a date that's at least not more than a month away. Today we went to write our test, waited outside like everyone else. They opened the gate at 8 o'clock. We signed in and went to the inquiry cubicle, only to hear there and then that the learners testing takes place on totally different grounds. We guickly rushed to our car and drove there, we were 15minutes late for the test. The person in charge of the tests just told us that we were already signed as absent and he didn't want to assist us any further. We should try to explain our 'story' to a Mr Koen he said. We went back to the offices and tried to get help from a Mr Koen (or Coen). We are still not sure if there is even a person by this name because no one took interest in us as we tried to get hold of someone to help us. We were treated as normal late comers and got a new date, again 3 weeks later. There is no sign or warning whatsoever that you don't write the learners where you made the booking. This is totally ridiculous and absurd.

Philip, Rayton Licensing Department, 15 July '13

- *categories that fall under 'other' include:
- lack of service.
- lack of call centre assistance.
- unfair instructors

I need to obtain a driving permit from Waltloo licence department . So I arrived there after their systems have been offline for 3 consecutive days. I stood the long queue from 9am. There was only 1 person that was assigned to assist about 60 people, while others were having conversations with other co-workers. Only after I complained did they get 1 other person to assist. I spent the whole day waiting till I was assisted at 15:10. Then it was time to pay, there were 3 people left to pay at the cashiers and there were 3 cashiers that were assisting people. At 15:30 the manager came in and told them to close the till and the 3 people should come again tomorrow. I tried to tell the manager but she refused to listen that each teller could help the 3 of us, and everyone could go home. She refused to listen and told security to remove us, she didn't want to hear that I have been there on 3 occasions and their systems were down, and that I have been off work trying to obtain my permit. She did not apologise just said we have to go home. Now I have spent 4 days at the licence department and have accomplished nothing.

Busi, Waltloo Licensing Department, 13 Mar '13



2.2.2 Administration Processing and Fraud:

The administration systems that are used in the licensing departments are still paper-based. Paperwork is received, filled out and paid for on site. Additional items such as certified copies of identification documents (IDs) and ID photos need to be arranged privately and brought along. Finger printing and eye tests form part of some of the processes and these are undertaken by the department. Processing time for the applications can take up to eight weeks, if not longer. It is in accordance with the Gauteng Provincial Government Legislature that a paper-based system is used as it is a requirement that there must always be a hard copy of any paper work that has been processed (Marais 2013).

However, a major problem that faces the Licensing Department is the issuing of fraudulent learner's and driver's licences. Unfortunately this corruption stems from the department administration system itself. These fraudulent cases are easier to get away with due to the paper-based administration process.

A national investigation has been underway since 2005 and within the first two years of these investigations the Special Investigating Unit (SIU) had discovered an alarming 42,229 invalid licences in the system (Flanagan 2007). The SIU team is working with police, the National Intelligence Agency and the National Prosecuting Authority in these ongoing investigations. This affects all provinces, as problems were identified at 123 of the 360 driver's licence testing stations. O'Brien states, "there's definitely widespread corruption" (in Flanagan 2007). South Africa is said to have one of the highest invalid driver's licence rates with numbers varying between 20% and 40% of all licences issued (i-Fact n.d.). Figure 2.3 explains how this fraud takes place through means of "sure pass" testing.

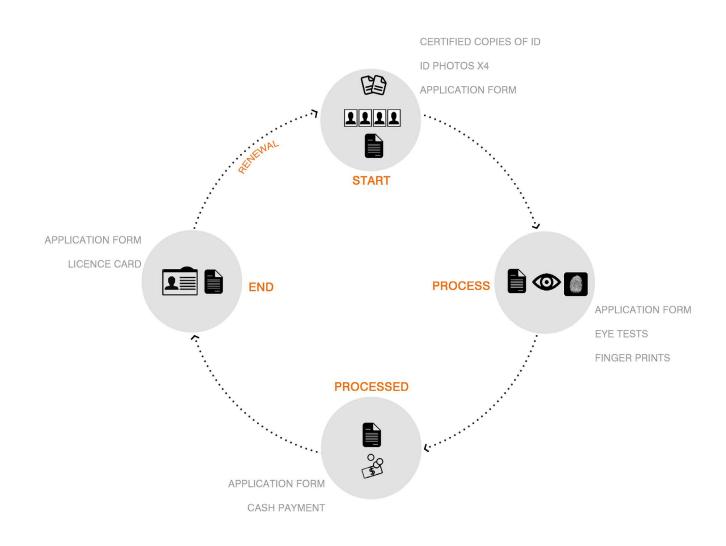
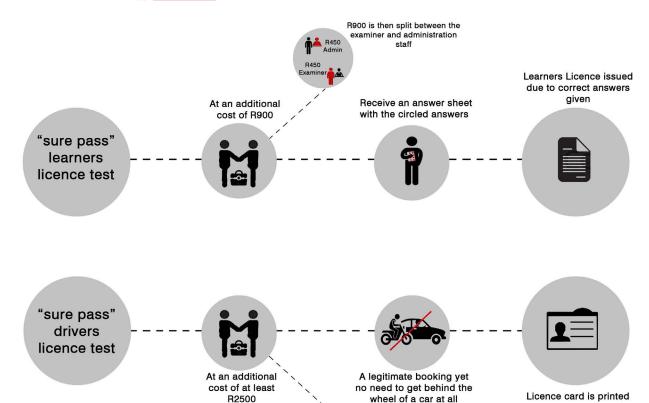


Figure 2.2 Paper Based Administration systems within the Licensing Department

Technology is being used to counteract this fraud. The testing is being computerised through touch screens and audio-visual equipment in the classroom (Chiloane 2003) and monitored by cameras on the testing grounds and cars (Carte Blanche 2006). These technological systems cater to a much larger South African demographic as it includes people who are illiterate and incorporates the 11 official languages (Chiloane 2003). Rossburgh station in Kwa-Zulu Natal was the pilot station for new technological advancements. Over time the paper-based systems will disappear as now systems are being introduced with iris and thumbprint scans, and digital photo and signature capturing (Carte Blanche 2006).



R1250

+/- R2500 is then split between the examiner and administration

Figure 2.3 Sure Pass Test Process (adapted from SAPA 2011)





Figure 2.4 New Technological Measures to combat fraud



within 30 minutes. If scanned it appears as not to be on the system



2.2.3 Identity:

The Tshwane Licensing Department falls under the brand identity of the City of Tshwane municipality. For this very reason it does not have an identity of its own. The new City of Tshwane brand identity was developed in October 2011 after the City of Tshwane Metropolitan Municipality and the Metsweding District Municipality merged (City of Tshwane 2011). The character of the city had changed significantly and therefore there was a need to change its brand identity as well (City of Tshwane 2011). The new identity was developed by graphic design students from different tertiary institutions in Pretoria. The main element of the new design is the Union Buildings, which is an iconic landmark and has come to be globally recognised as a symbol of Tshwane (City of Tshwane 2011). A further explanation of the new logo is seen in Figure 2.6.

"Even the most mundane transactions can be turned into memorable moments." -- B.J. Pine II and J.H Gilmore from the article 'The Experience Economy' (Wheeler 2009:18)

Brand experience is an individual user's experience as they interact with the brand, where each interaction contributes to their overall perception of that brand (Landa 2006:9). Depending on the interaction it could change the user's perception to positive, negative or neutral. These interactions can happen on different planes such as advertising (print, radio, internet, TV), visual identity (logo, packaging) and environment (stores, offices and public spaces) (Landa 2006:9). The ultimate goal with a brand identity is to "weave a common thread" as stated by Robin Landa, so as to harmonise all the elements of a brand identity throughout all experiences (2006:9). This can be shown in figure 2.5 showing that every customer contact provides opportunity to enhance emotional connection (Wheeler 2009:18).

The City of Tshwane has a strong, new brand identity, however, this is not reflected in its service buildings. These buildings seem to follow a generic pattern of face brick walls, white ceiling tiles and discoloured floor tiling. This, too, is the case with the Tshwane Licensing Department. It has no street façade or interior identity.

Saker (2010:16) investigates ways in which 'understanding' can be created within governmental architecture. In his thesis, he states that governmental buildings should be the flagship buildings of urban regeneration, however, he notes that typically they poorly engage with the street edge and send a strong exclusionary message (Saker 2010:14). Integrating brand identity into building design would allow a welcoming platform to which the user could connect. A branding exercise, therefore, will need to form part of the design task in this thesis.

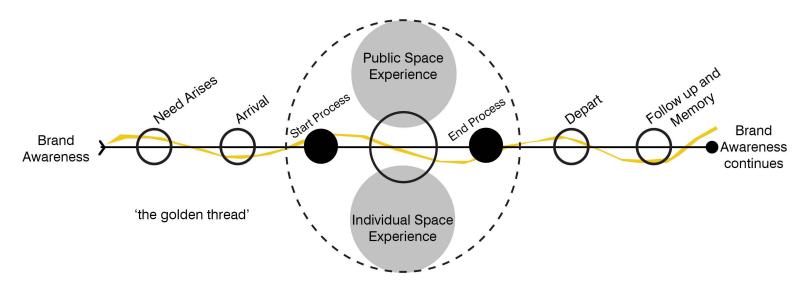
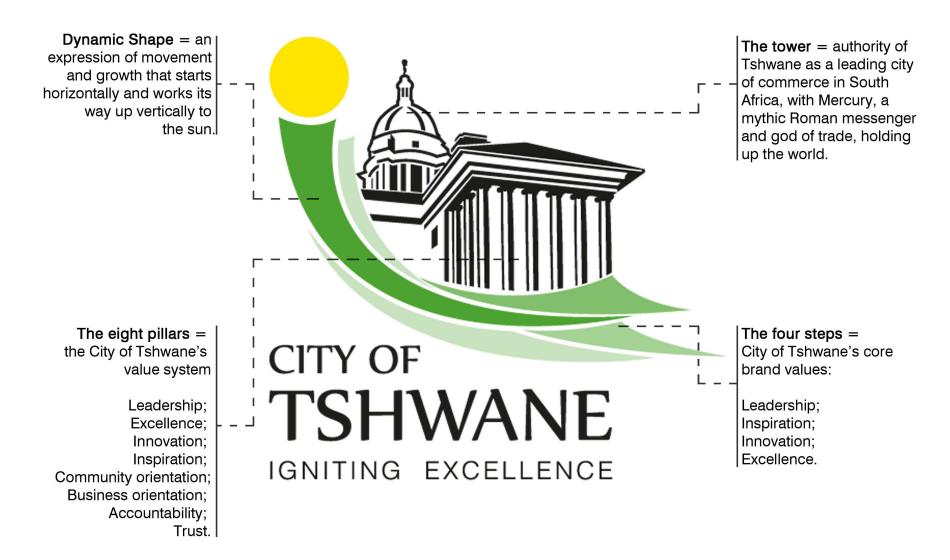


Figure 2.5 Customer contact provides opportunity to enhance emotional connection (adapted from Wheeler 2009 and Landa 2006)







"Form is the solution to the problem, the **context** defines the problem." (Alexander in O'Neil 2009:31)

A basic outline is used to study and gather data from the four Tshwane Licensing department sites, namely Centurion, Waltloo, Akasia and Rayton. This outline is derived from Elonah O'Neil's dissertation, "Grace under Pressure" (2009) and is used to identify and compare factors within the buildings that are problematic. This outline will be explained in this chapter. Through the analysis, data collected will be used as principles to inform the design. As mentioned in Chapter 1, a variety of methods are used to gather and present that data found at these four sites:

2.3.1 Semi-structured Observation:

This was the main method of gaining data on the initial visits to the four sites. Certain criteria were established beforehand in order to guide the observation. The findings were tabulated (Appendix A). All observations, even if not part of the criteria, were recorded. Analysis of the findings highlights three main problems that the department buildings face, namely Wayfinding, Access and Comfort.

Wayfinding: This is how information within the building is portrayed and in turn understood by the user. This deals with signage, process and layout of the interior.

Access: This is how accessible the building is to the user, whether it be universal or just general admission. Accessibility also deals with how easy the building is to navigate in terms of circulation and disclosure.

Comfort: This is how comfortable the building is to user, both physically and psychologically. It deals with things from feeling welcome, being able to do the required task with ease, to feeling physically comfortable.

These principles are used as evaluation criteria to highlight these problems within further analysis of the department buildings.

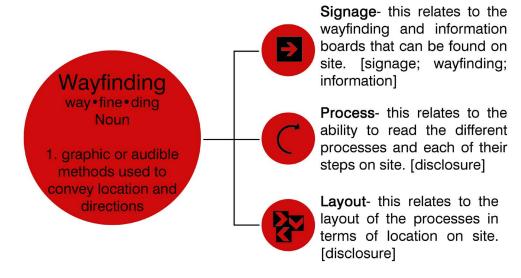
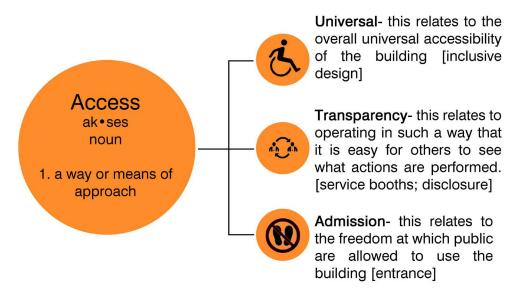
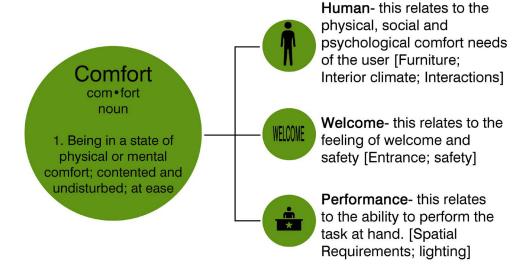


Figure 2.7 Explanation of the 'Robot' Evaluation Criteria

As noted previously, understanding all parts of the system are vitally important. Therefore engaging the border between Service Design and Interior Design delves into a unique understanding of the processes and its problems within the service delivery, and through this understanding a more informed spatial solution can be developed.

Designit, a global strategic design firm, focus on the design of product-service experiences, and transformation of businesses. Designit's methods were studied in order to understand the importance of service design and its evident application in interior design. Two of their projects offer a great understanding of this process.







The Problem: Women with high risk of having breast cancer only had access to the hospital after a wait of up to three months due to logistical procedures. Once there, patients had a very negative experience due to inefficiency, and the process and waiting procedure was unsympathetic to the life-changing events that took place.

The Aim: The aim was to improve the entire experience from waiting time to receiving any forms of information. This could be done by rethinking behind-the-scenes processes from a service design standpoint. An

important aspect in this rethinking was considering the hospital's role in improving its 'customer service'. Designit carried out in-depth user research to understand the pain points of the existing patient journey and what an ideal experience would look like.

The Solution: The user journey was reduced from 90 days to a total of three days. The journey allows for the patient to be informed every step of the way with all the necessary support. The patient receives literature about the process along with a direct phone number in case they have any questions. (Designit n.d.)

The Oslo University Hospital Breast Cancer Ward:

This precedent allowed insight into the method behind investigating and re-mapping the user journey and experience within an environment and throughout a given process. This same approach will be adapted to studying and assessing the Tshwane Licensing Department user journey and experience.

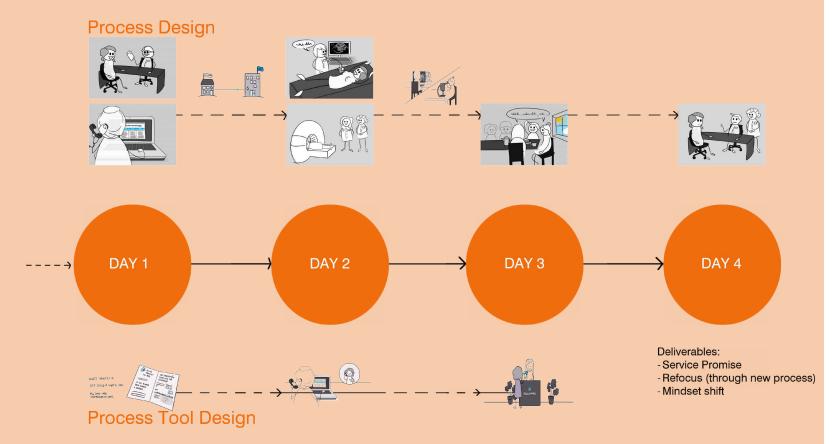


Figure 2.8 DesignIt - Process for Oslo University Hospital Breast Cancer Ward (Designit n.d.)

Designit Process:

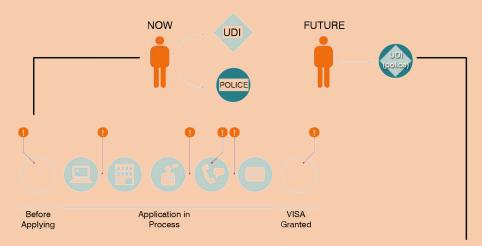
- 1. Map the patient journey (What, when, who is involved)
- 2. Understand patient's needs
- 3. Create ideas based on needs
- 4. Validate during process
- 5. Deliver a realistic solution (design for all touch points)

Problems:

- Hospital to noisy, therefore analysis was interrupted
- Patients had a bad first impression
- Waiting is frustrating
- Patients taking charge and sending in own reports
- -Systems errors, patients not in system
- Patients were getting no answers



The Norwegian Directorate of Immigration (UDI):



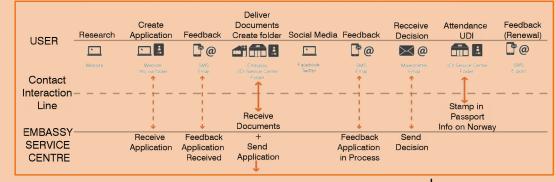




Figure 2.9 DesignIt - The Norwegian Directorate of Immigration UDI (Designit n.d. and Slideshare 2013)

The Problem: This service design project was initiated by the Norwegian Design Council to design and improve the user experience when immigrating to Norway. In 2010, the government decided that the applications for residence permits and citizenship were going to be processed by UDI (Norwegian Immigration) rather than by the police. This allows police more time to focus on $\frac{\dot{\omega}}{\omega}$ their core tasks.

The Aim: The goal was to reduce waiting time for the end users, reduce the processing time of applications, and design new offices where the applications and interviews for Norwegian immigrants are held. The issues were discovered through research. It was clear that it was between the touch points that users were the most frustrated. The goal was to focus on making smooth transitions between the different touch points. User involvement was crucial. Designit facilitated five workshops to which users were invited (end users, police officers, and UDI employees). Designit was also out in the field observing how the application process was handled. Designit observed real interviews and spoke to the users afterwards.

The Solution: New touch points in the service will make sure that the user trusts UDI, gets guidance when needed and feedback at the right time. Designit designed a file/diary for the users that they receive at first interaction and this diary will follow them through the whole process. The results are a new identity for UDI, interior design sketches for the new offices and recommendations from Designit on how to implement the service in a user-friendly manner. (Designit n.d. and Slideshare 2013)

As with the previous precedent the method that was implemented will be studied and applied to the Tshwane Licensing Department. The UDI supports its user through feedback and guidance. This is implemented from forms handed out right through to the design of counters. This holistic systems thinking will guide the design for the Tshwane Licensing Department.



2.3.3 Information Visualization:

"It has been scientifically proven that providing people with a simple, direct visualization tool helps them become more aware of their activity and ultimately motivates people to be more involved than any other traditional method." Andrew Vande Moere (Klanten et al. 2010:29).

Using information visualization is an unconventional way of gathering information in terms of context. However, through using and portraying this data in this manner it displays it on a platform that everyone, of all disciplines, can understand. Using visual information in combination with interior design elements will be used to report on problems found in this chapter.

"Information Visualization can be an instrumental part of changing people's behaviour. It can ultimately advance our ability to persuade government and lawmakers, while also contributing to a responsive public awareness." Manual Lima (Klanten et al. 2010:29).

Visualizing Palestine Organization:

4 Brief

5. Design

6. Review

3. Story

7. Publish

PRODUCTION

Visualizing Palestine uses creative visuals to describe a factual rights-based narrative of Palestine/Israel. It is the intersection of communication, social sciences, technology, design and urban studies for social justice (Visualizing Palestine 2014).

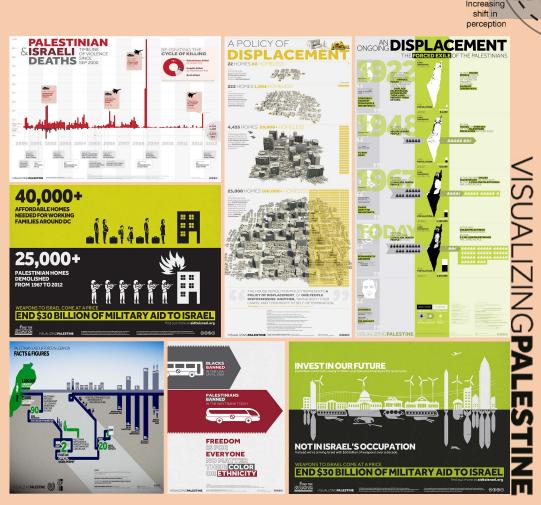


Figure 2.10 Visualizing Palestine's process and works (Visualizing Palestine 2014)



Meeting Structures (Overlegstructuren) - Luna Maurer, 2007

This is the mapping of art and bureaucracy across time and space in an art gallery. The meeting agenda of the gallery over a process of six months was taped with colour coded strips on the floor in an exhibition. This mapping reveals the different facets of organisation between artists and funding, local government, and communication designers at play in a medium-sized art-institution.



Figure 2.11 Meeting Structures by Luna Maurer (Klanten 2010:56)

2.3.4 Constructing Touch Points and Investigating User Interactions:

The precedents studied and mentioned in this chapter moulded the approach to deciphering and displaying the data found at the four licensing department sites. Studying Designit's process allowed an understanding of interactions between user and building in the Tshwane Licensing Department buildings. These are classified as 'Touch Points' and they illustrate where the public user interacts with the building, the service provider and with other public users. Understanding these specific touch points provide insight to what goes wrong and possibly right in the cooperation between building and user. Building Touch Points are categorised into threshold, service and amenities.

Threshold: Consists of any elements of entrance and initial approach in the building. The interior aspects are entrance area and reception area.

Service: Is comprised of all interior elements where the service gets provided. These take place in different types of forms namely, service counters, testing booths and test writing rooms.

Amenities: Covers all extra areas that assist in the service being given. The main amenities are the waiting areas and the WCs whereas secondary or auxiliary amenities include services such as refreshments, money, and photocopying.

Luna Maurer's mapping of an art gallery's meeting schedule as an exhibition highlighting the relationship between art and money uses information visualisation to portray relationships that are not always as visible. For this reason, combining an ordinary 2D plan with data depicts information that is both useful to the layman and the designer. Analysis is therefore tested and portrayed in a visual format.



2.3.5 Image Analysis:

Further investigation was done on the building through analysing photographic images that were taken on site and overlaying them with observational notes. These images were categorised according to the building touch points and rated according to the three evaluation criteria established from the initial analysis.

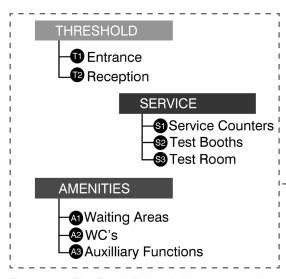


Figure 2.12 The Touch Points (with map codes)

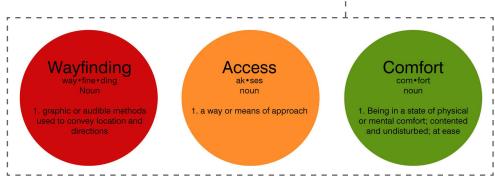


Figure 2.13 The 'Robot' Evaluation Criteria

2.3.6 The Licencing Department of Tshwane Context Outline Results:

All the methods described in the previous portion of this chapter will now be used to display the information gathered and analysed. What this aims to achieve is to show the current situation in each department building in comparison to one another. These findings are also compared to national legislature, namely the Transport Act and SANS 10400. To recap, the building was divided into user touch points (where users interact with building, service providers and other users), namely

threshold, service and amenities. It was assessed against evaluation criteria that were developed in terms of problems found on site; these are 1) wayfinding, 2) access and 3) comfort. Figure 2.14 explains how the evaluation criteria will be matched up against the user touch points. These findings will be portrayed in the tables and images that follow.

Assessing the touch points against the evaluation criteria will highlight in which touch point area intervention is needed most. In investigating all four sites, it delineates problems that are found at all four

Integrating service design and information visualization elements into the contextual framework have provided rich information for a design solution. This analysis provides an in-depth idea as to where problems lie within these department buildings.

Comparing the findings against Legislation (table 2.1) proved that there is not sufficient regulations controlling the functional requirements needed from these buildings.

ANALYSIS DESIGN

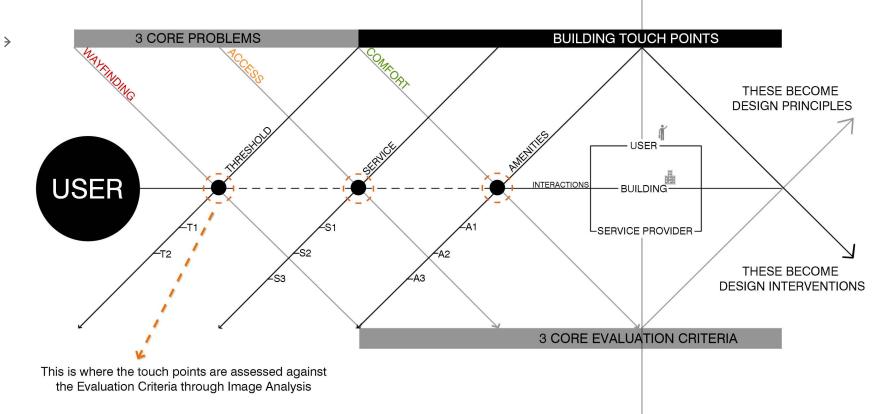


Figure 2.14 Explanation of Touch Point vs. Evaluation Criteria Analysis University of Pretoria



Table 2.1 Legislation Governing the Context Outline

Table 2.1 Legislation Governing the Context Outline			
Τοι	ich Points	SANS 10400 - Part S: Facilities for persons with disabilities (SANS 10400:2011)	National Road Traffic Act, Act No. 93 of 1996 (SA Department Of Transport 2006)
THRESHOLD	Entrance T1	4 Requirements: 4.4 External and internal circulation	
	11	4.4.1.5 Each accessible entrance to a building shall have at least one door	
		or doorway in accordance with the requirements of 4.6.1	
		4.4.1.6 Revolving doors, revolving gates and turnstiles shall not form part	
		of an accessible route.	
	Reception	S2 Facilities to be Provided (Annex A)	
	T2	b) there shall be a means of access suitable for use by persons with	
		disabilities, from the main and ancillary approaches of the building to the	
		ground storey; via the main entrance, and any secondary entrance.	
	Service	S2 - Facilities to be Provided (Annex A)	2.4. Every driving licence testing centre shall have an online NaTiS or
SERVICE	Counter	(1) In any building contemplated in regulation S1 requiring facilities for	eNaTIS computer system and a laser printer on the premises as referred to
	S1	persons with disabilities:	in the third column of the above table.
	Test Booth	(a) persons with disabilities shall be able to safely enter the building, use all the facilities subject to the provisions of sub regulation (3) within it and	2.3. Vision testing apparatus and testing facilities as well as the electronic
	S2	leave it;	motorcycle test apparatus as approved by the Department of Transport, which measures speed and allocates penalty points, shall be in good
		10410 14,	working order and condition.
	Test Room	C.10.7 Circulation space (Annex C) Circulation space around features	2.5. The learners licence test facilities shall comply with the requirements
	S3	within the environment, such as to access a desk space, to use a Vending	as set in paragraph 5.1
		machine, to operate a switch, socket or lever, shall be provided.	5.1 The test room where a learner's test is conducted shall - (a) be
			clean;(b) have sufficient light and ventilation;(c) be disturbance free and
			have a notice on the door indicating "Silence test in progress", not have
			telephones or cell phones which are operative during the test;(d) have
			tables and chairs in good condition, positioned in such a manner to allow the invigilator to move freely in between the tables;(e) have a wall clock in
			a good working order, visible to all applicants, displaying the correct time;
			and (f) have an easy legible example displayed, visible to all applicants in
			the test room of how the preferred answer is to be marked.
AMENITIES	Waiting Areas	4.4 External and internal circulation	
	A1	4.4.1.7 Pause areas, with suitable seating, shall be provided adjacent to an	
	\MO! -	accessible route at intervals that do not exceed 25 m.	
	WC's A2	4.12.1 In any building where facilities for persons with disabilities are required in terms of Regulation S1 (see annex A), there shall be one or	
	A2	more toilets or unisex toilet facilities suitable for use by wheelchair users,	
		provided that: a) In any building requiring toilet facilities to which part S of	
		the Regulations applies, the first toilet provided shall be a unisex toilet	
		facility, for use by persons with and without disabilities, preferably in	
		accordance with the details shown in annex D.	
	Auxiliary		
	A3		





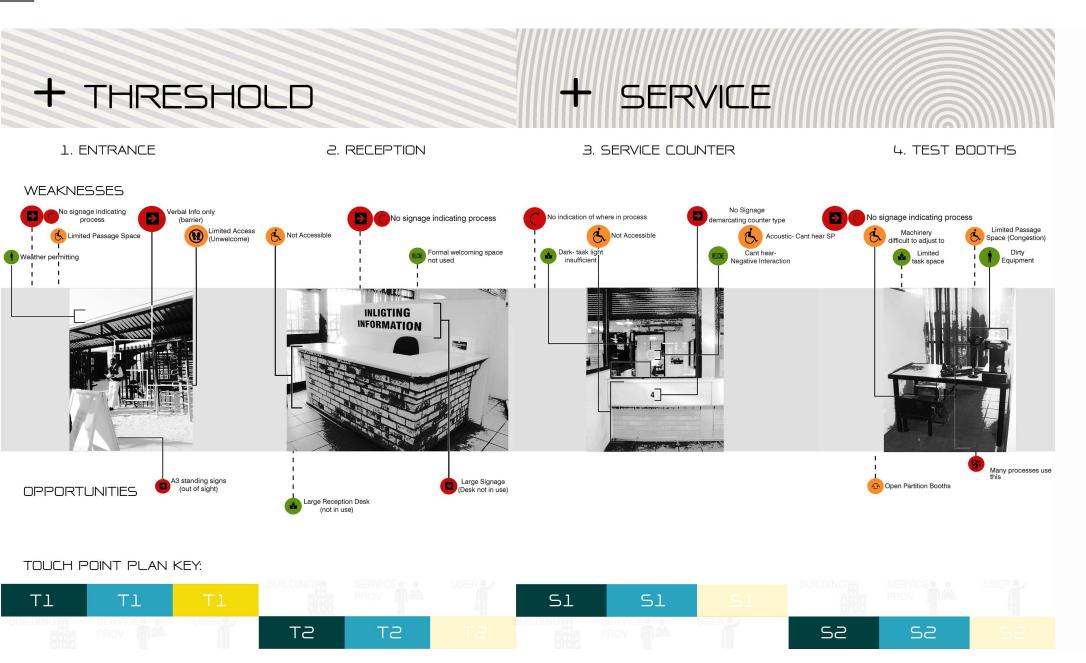


Table 2.2 Centurion Image Analysis



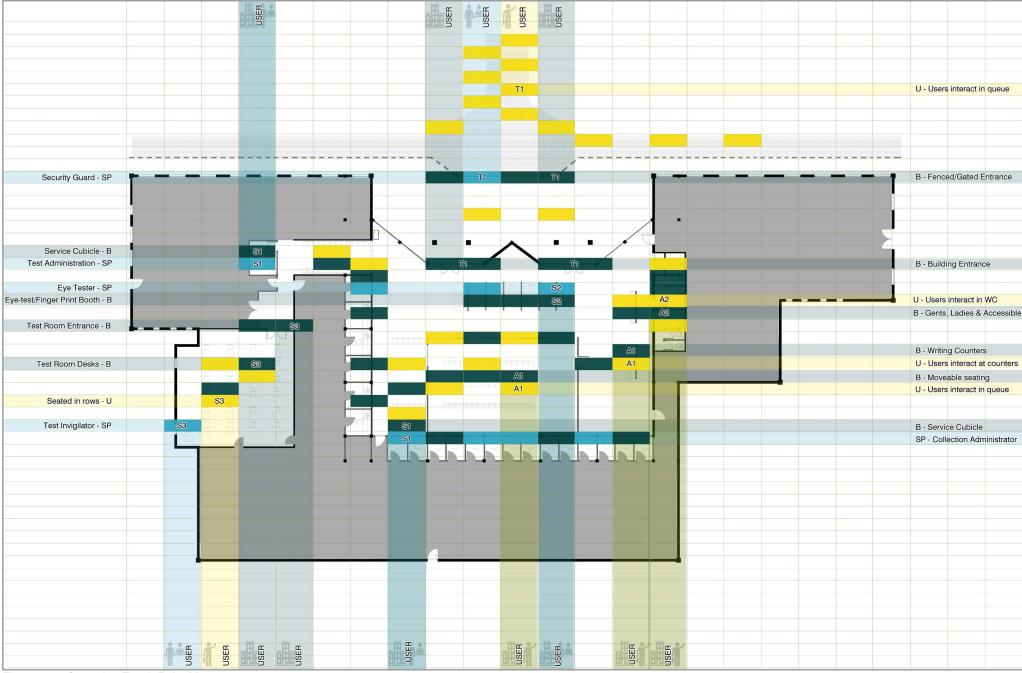


Figure 2.15 Centurion Touch Point Map



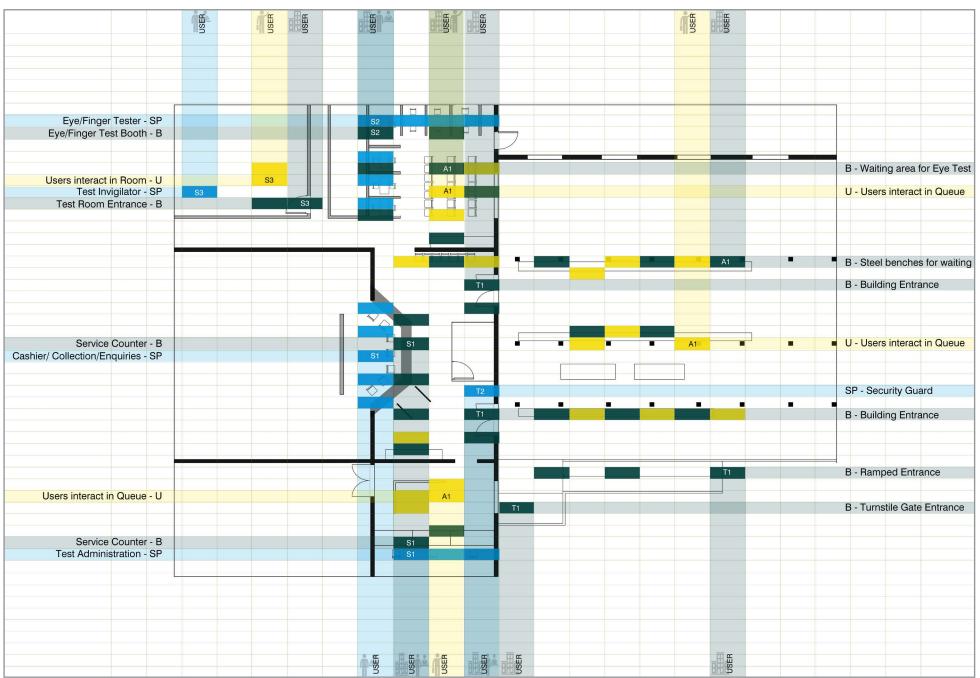
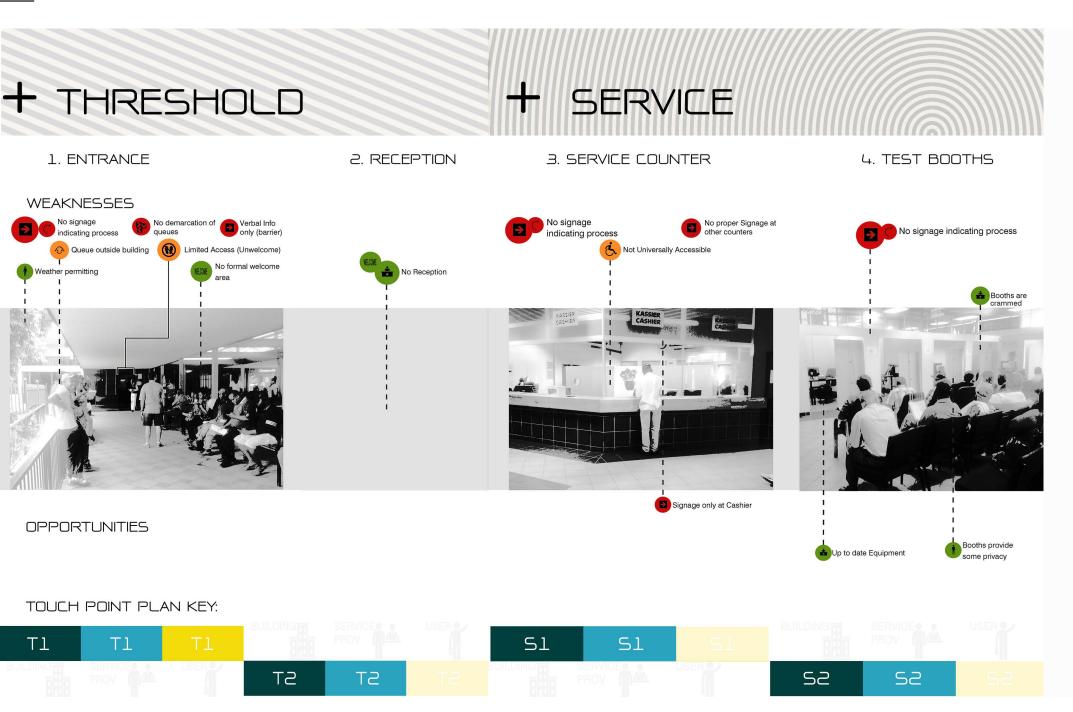
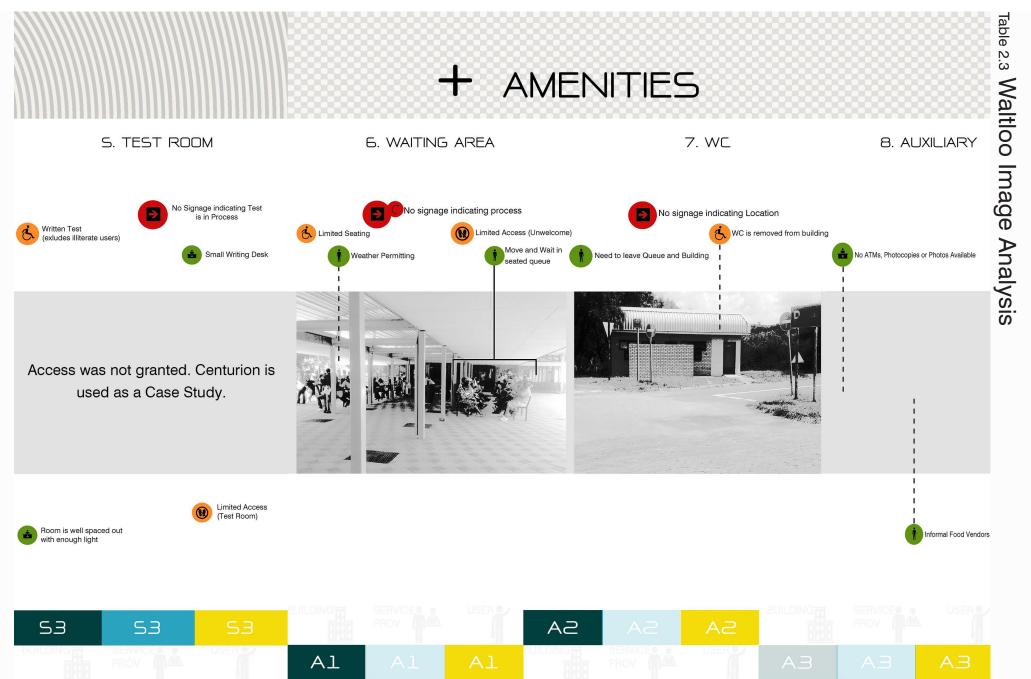


Figure 2.16 Waltloo Touch Point Map

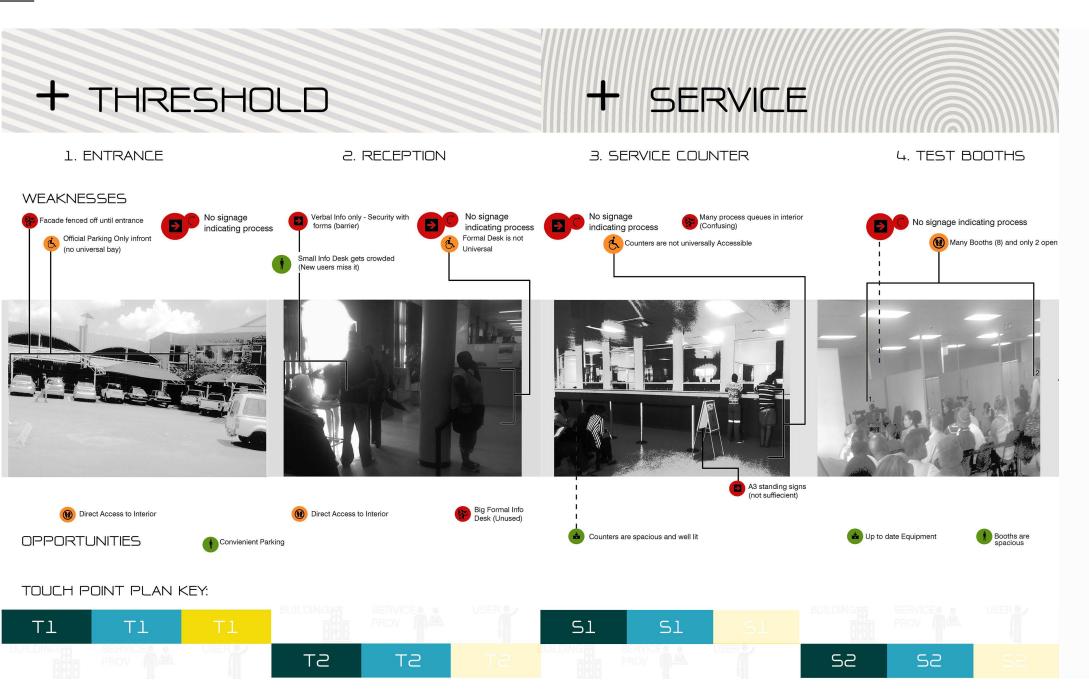




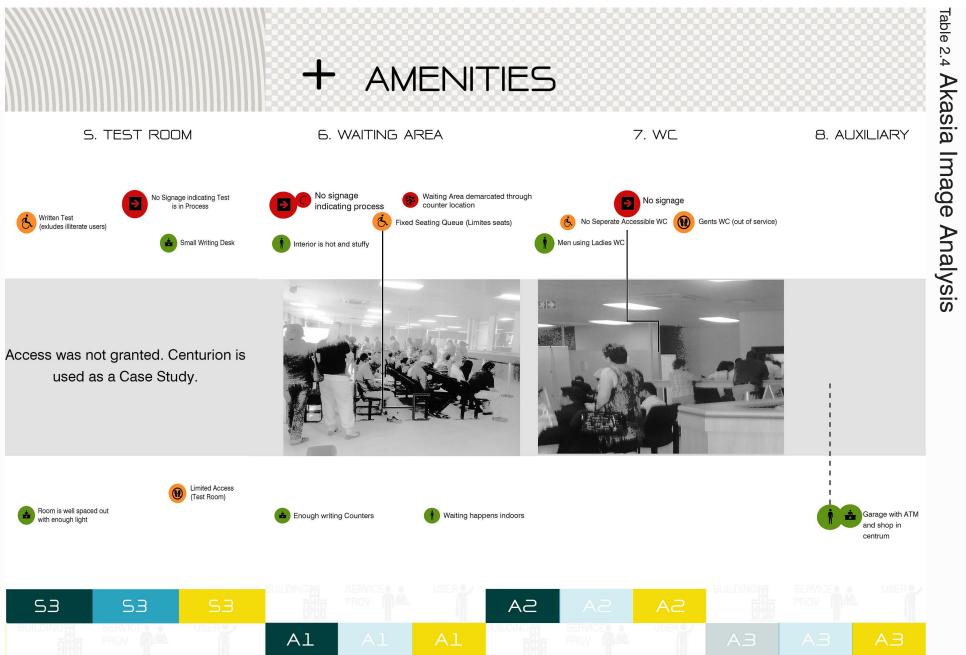














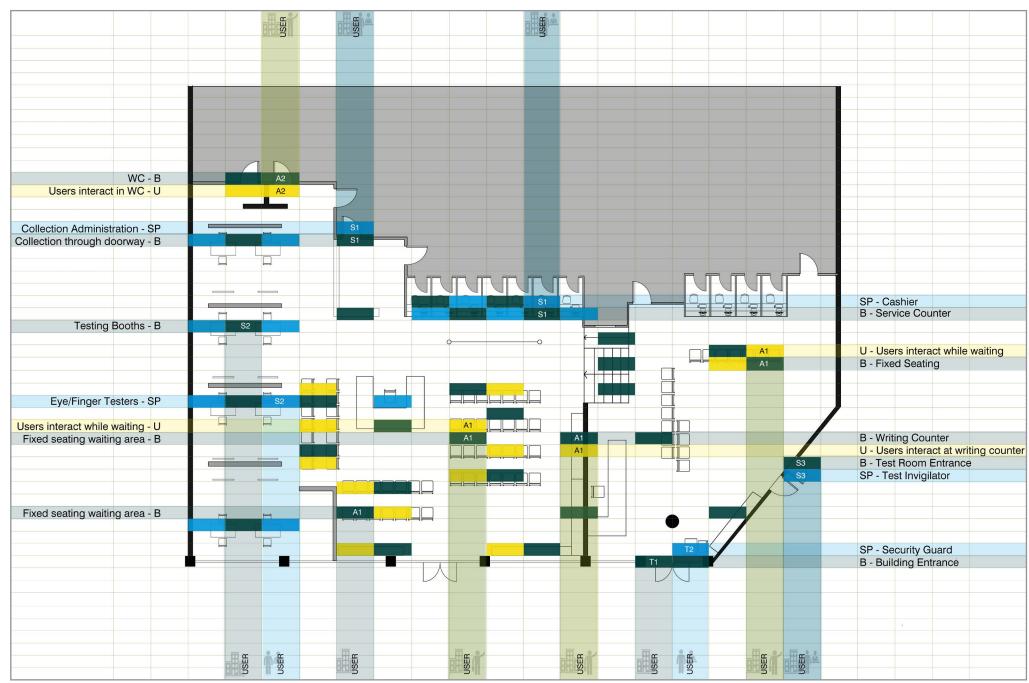


Figure 2.17 Akasia Touch Point Map



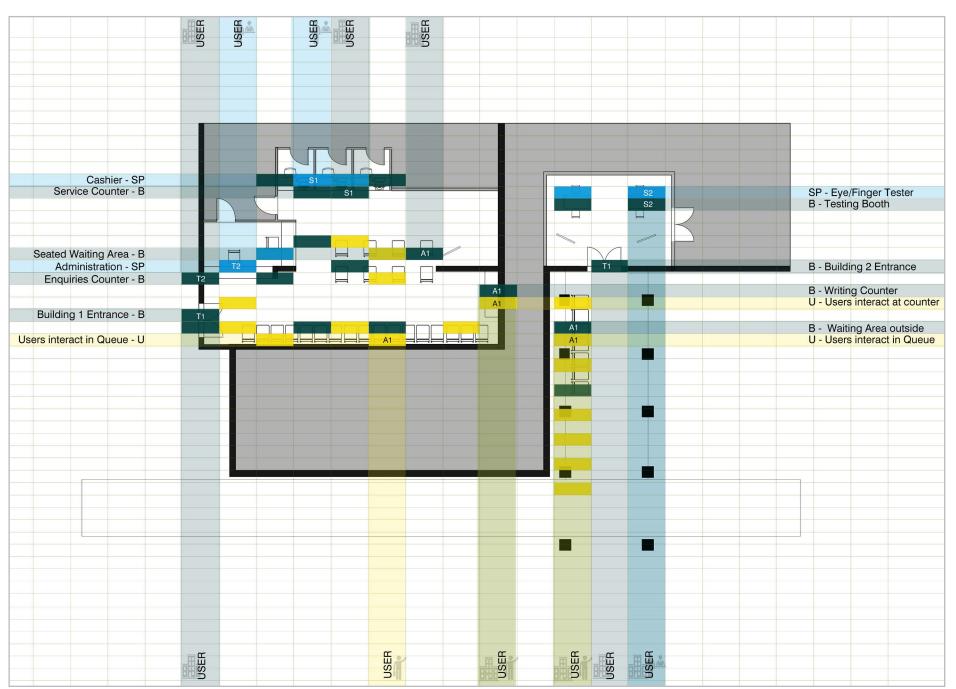
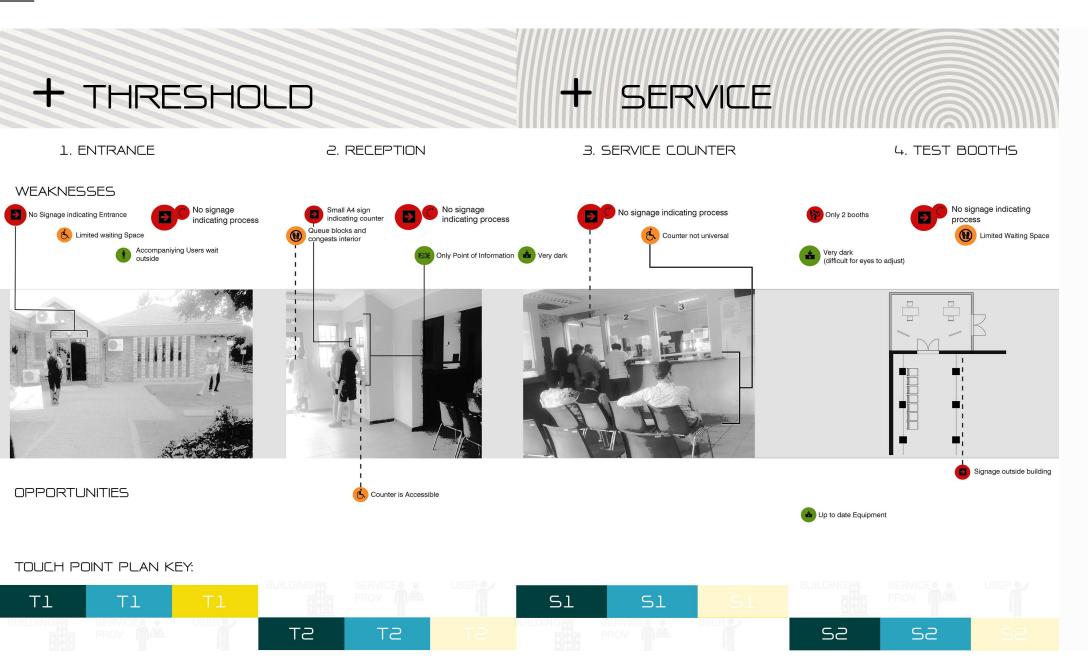
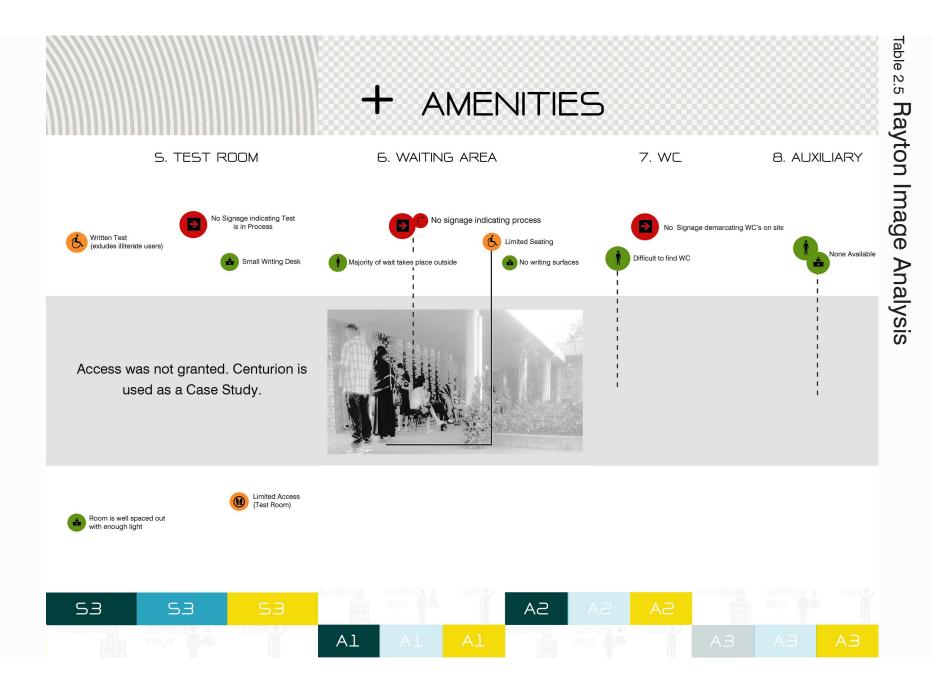


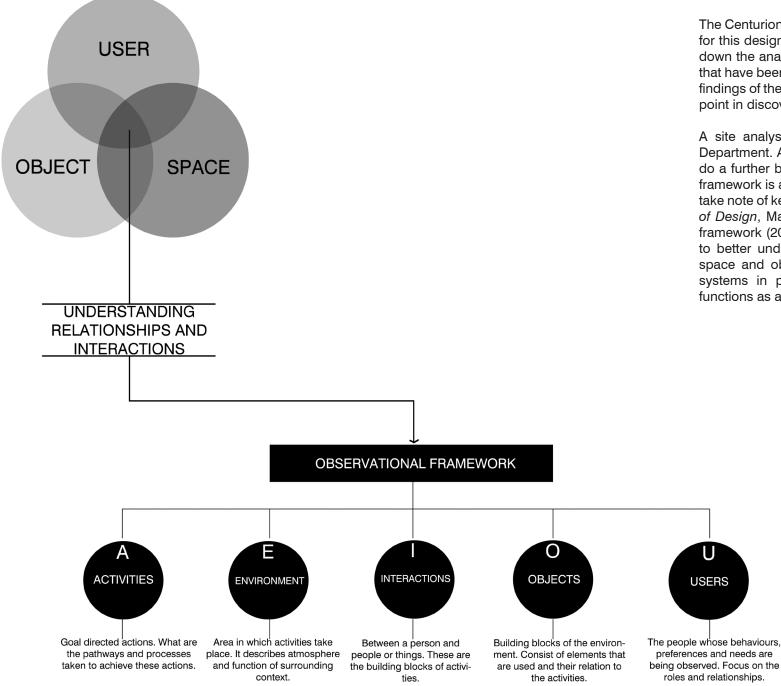
Figure 2.18 Rayton Touch Point Map











The Centurion Licensing Department is the site chosen for this design dissertation. The next step is to narrow down the analysis to come to grips with the problems that have been highlighted in the previous section. The findings of the analysis done in part two are the starting point in discovering a design solution.

A site analysis is done of the Centurion Licensing Department. An observational analysis is then used to do a further building analysis. Using an observational framework is a method that guides the observations to take note of key details. In the book, *Universal Methods of Design*, Martin and Hanington denote the 'AEIOU' framework (2012: 28). This framework is implemented to better understand the relationships between user space and object, therefore taking a look at all the systems in place to understand how the building functions as a whole.

Figure 2.19 The Observational Framework (adapted from Martin and Hanington 2012)



2.4.1 Centurion Site Analysis:

R101 N14 M19 John Vorster Rd Danie Joubert Freeway CENTURION Hennopspar M36 Olievenhoutsbosch Rd Zwartkops Wierda Park Irene Centurion Golf Estate M31 Highveld Southdowns Estate Denel Brakfontein Rooihuiskraal 399-Jr M31 Uitsig Rd Doornkloof 391-Jr INDUSTRIAL Louwlardia Heritage Hill Estate Midstream UNDEVELOPED LAND COMMERCIAL

Figure 2.20 Map of Centurion Licensing Department and its surrounds

R101

Ben Schoeman

Freeway

Old Johannesburg Rd

This building was built specifically for the Licensing Department and this building was occupied in 2000 when the Centurion town council fell under the City of Tshwane municipality (Marais 2013). It was officially opened on the 25th of November 2000. Before this the Licensing Department was located in Lyttelton in Kruger Street. This was the same location as the old Centurion Home Affairs Department building.

The Centurion Licensing Department is found in the heart of the three major highways in Centurion. The Department is located in Region 4 (of 7) of the City of Tshwane Metropolitan Municipality (City of Tshwane 2012). It is the most active developmental region in Tshwane and is where most of the expansion and rejuvenation will take place in Tshwane in the next period of time (Independent Online 2013). Region 4 is classified as a mixed use zone. The department is surrounded by commercial, industrial as well as residential areas but its most immediate surroundings are made up of undeveloped land. Being surrounded by both residential and commercial zones allows users that work and stay in the area to access the site for service.

The Centurion Licensing Department is located along Nellmapius Drive (M31) in-between the John Vorster Intersection and the R101 intersection. This stretch of road, however, lacks any sort of identity as it is mostly surrounded by undeveloped land and high-walled residential estates. The only other buildings along this stretch are the Irene Weather Testing Centre and Denel Dynamics Campus (previously known as Kentron).

The Licensing Department Campus has a number of buildings, parking lots, and testing grounds that is surrounded by landscape. The landscape areas on this site take on an organic form and fill in where the different roads have left islands. The main building is where the public service area and private offices are found. The

LICENSING DEPARTMENT

RESIDENTIAL



Vehicle Roadworthy Testing building is comprised of a triple volume structure that is open allowing vehicles to pass through for testing. The South African Police Service has offices on the site but they are, however, not connected to the main building. They are currently housed in modified container offices. There is a strong primary axis that connects the parking lot to the front entrance of the building. This forms a singular entrance passage that leads up to the building. A secondary axis connects the main building to the Driver's Testing Grounds on the left and to the Vehicle Roadworthy Testing structure on the right. There is no signage on Nellmapius Drive and the first information that is found is at the entrance gate, however, this entrance gate and security house is dilapidated. Improvements are currently being made to the boundary fence; the wired fence is being replaced with a concrete fence.

The site can be accessed via public transport and the closest bus top is Louwlardia, which is 450m away. A Gautrain bus stop (C1-13) is situated right in front of the entrance road to the Licensing Department. This is on bus route C1-Techno Park. Supporting services such as ID photos, photocopying and food and drinks cannot be found on site. Other supporting services such as automatic teller machines (ATMs) are much further away. The closest ATMs and post office facilities (Postnet) are four kilometres away.

On a smaller scale the building has no interesting architectural details or elements. It is built with materials typical to the industrial surrounds such as concrete, brick and corrugated sheet roofing. The interior consists of floor tiles, ceiling tiles and painted drywall partitioning. Interior furniture consists of built-in service counters and moveable seating. The signage and wayfinding within the building is not legible as its too small and often contradictory. Its also very untidy as they are printed and celotaped to surfaces. The building has a lovely landscape that is not being utilized to its potential. This can be seen in figure 2.23.

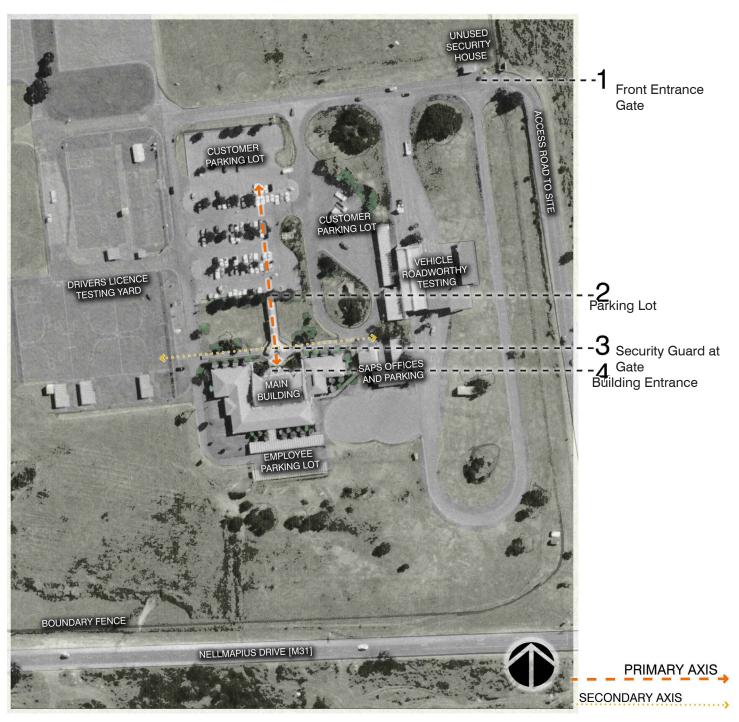


Figure 2.21 Site Map of Centurion Licensing Department © University of Pretoria











Figure 2.23 Photo Board - Materiality, Signage and Landscape

2.4.2.1 Activities

Existing Process:

The existing process was investigated through semistructured observation in order to see the process in motion, study the user intervals and to document the time taken. Each step (service point) and time taken is captured in the diagram. Users are allowed into the building in intervals of 15 for each "service category".

+ SITE

ANALYSIS

Figure 2.24 The Existing Process

DLTC Learners/Drivers test Counter, Conversion of Foreign

Licence counter, Application/issue of Instructors Certificates

4. SECURITY GUARDS



Introduction to User:

This project does not solely rely on only improving the public perception but on improving the employee perception as well. In designing for both these user groups it is important to take into consideration the way they move. People that are new to a space, move through the space in 'exploratory mode' where they move cautiously trying to take in as much information as they can (Deasy 1985:34). People accustomed to a space enter the building in 'habitual mode' and move briskly and with confidence while still taking in the environment around them (Deasy 1985:34). Incorprating the movement patterns of both types of user is important in the design so as to accommodate both sets of needs.

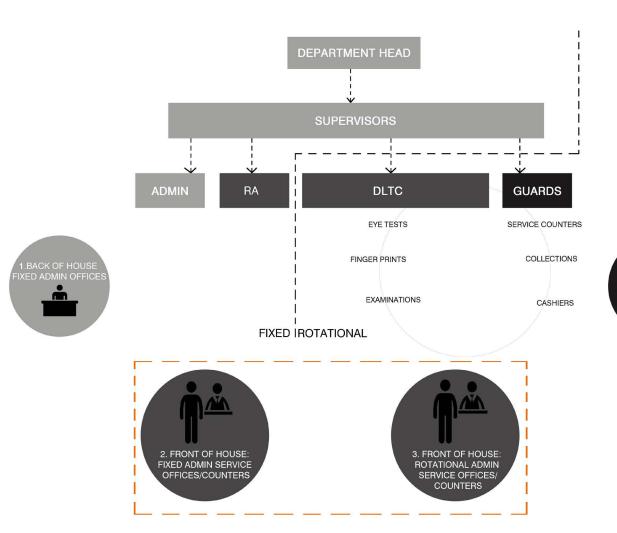
Employees:

The Tshwane Licensing Department has a number of different types of employees fulfilling different roles. As mentioned before the department is divided into two sections, the Registration Authority (RA) and the Driver's License Testing Centre (DLTC). These sections currently have allocated service counters within the building. The RA service counter's administration staff is fixed whereas the DLTC administration staff work on a rotational basis (Marais 2013).

This system was implemented by Mr Wouter Marais, the department head, to combat the temptation of corruption in the department. The staff in the DLTC section are trained up in all the fields, namely cashier, administration, examination, etc. and are placed on a random rotation schedule. Only on the day do they know which section they will be working in.

Therefore, there are three different types of employees to consider within the department:

- Back of House: Fixed Admin Offices
- Front of House: Fixed Admin Service Offices/ Counters
- Front/Back of House: Rotational Admin Service Offices/Counters







Public Users:

The public users of this building form a much wider group of people to analyse. Through doing an observational study these users can be classified into three main types:

- The first-time user
- The repeat user
- The accompanying user

The first-time user refers to the users that come in to do their learner's or driver's tests for the very first time. This will be their first introduction to the Licencing Department's processes and buildings, whether in this station or another. These users are important as it is the first time they perceive the building and the service processes and it is a chance to make sure that this perception is positive. It is also important to realise that some of these users are nervous for the test they are about to do, therefore to create a comforting environment will ease their stress.

The repeat user refers to the users that have been through the processes before, whether in this station or another. It is these users whose mind-set needs to be changed as in most cases they arrive expecting the worst.

The accompanying user refers to the user who has been brought along but does not need to use the service. This can vary between parents who bring their children and children who bring their parents. Users who don't have their licence yet will need someone to bring them, and more often than not users bring along these users for company as they know they are going to be in the queue for a while. Therefore an environment needs to be created where they also feel welcomed and entertained.

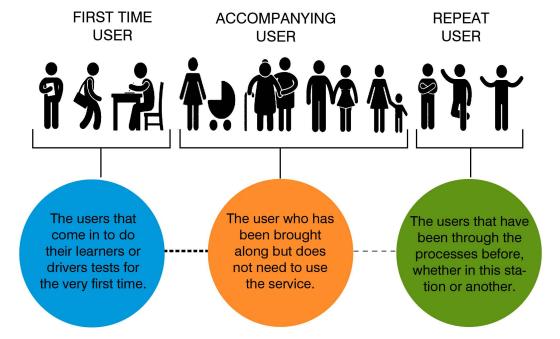


Figure 2.26 The Public User



Users per Interval:

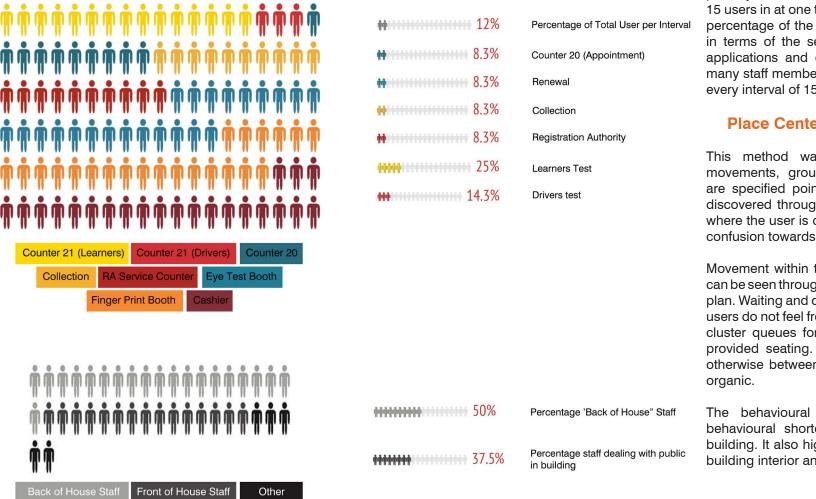


Figure 2.27 The Public User and Employed Staff per Interval Percentages

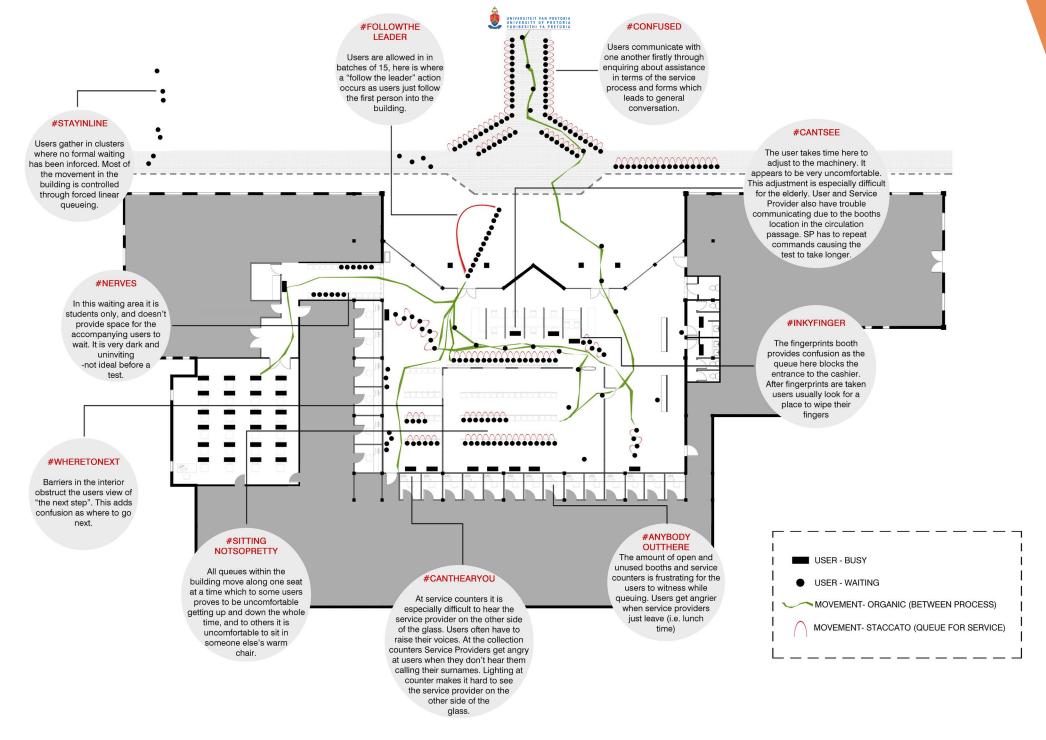
This is an indication of the percentage of total users per day that are served (limited access only allows 15 users in at one time). It further goes to show what percentage of the total users per day get served in in terms of the services provided (test, renewals, applications and collections). It also reflects how many staff members there are to serve the public at every interval of 15 users.

Place Centered Behavioural Mapping:

This method was used to depict the user's movements, grouping and 'anger points' (these are specified points within the building that were discovered through observation). These points are where the user is clearly seen to show frustration or confusion towards the building/service provider.

Movement within the building is very controlled as can be seen through the distinct linear patterns on the plan. Waiting and queuing is controlled rigorously so users do not feel free to move around. In some areas cluster queues form where the department hasn't provided seating. Movement between queues, or otherwise between different service points is more organic.

The behavioural map identifies a number of behavioural shortcomings from users within this building. It also highlights that these are caused by building interior and ergonomical failures.





This section deals with the physical objects within the observational study and this includes elements such as the building and its furniture as well as how permanenrt all these different elements are.

Building:

Analysis on the permanent structural elements and non-permanent elements provide important insight as to where new spatial areas can be created through removing interior partitioning. Existing wet services will be kept and used, possibly changing their nature from private to public. Furniture within this building will be kept, re-adapted or discarded. Old furniture is currently stacked in the back of the building unnecessarily wasting space. space, restricted access and comfort.

Approach to Building:

The approach to the building is filtered through a narrow covered passage that limits free movement towards the building. It also limits the amount of exterior waiting space and therefore the potential of the landscape to be enjoyed by users. As is evident in the building, the approach is also uncooperative in terms of wayfinding, access and comfort due to the lack of signage, circulation space, restricted access and comfort.

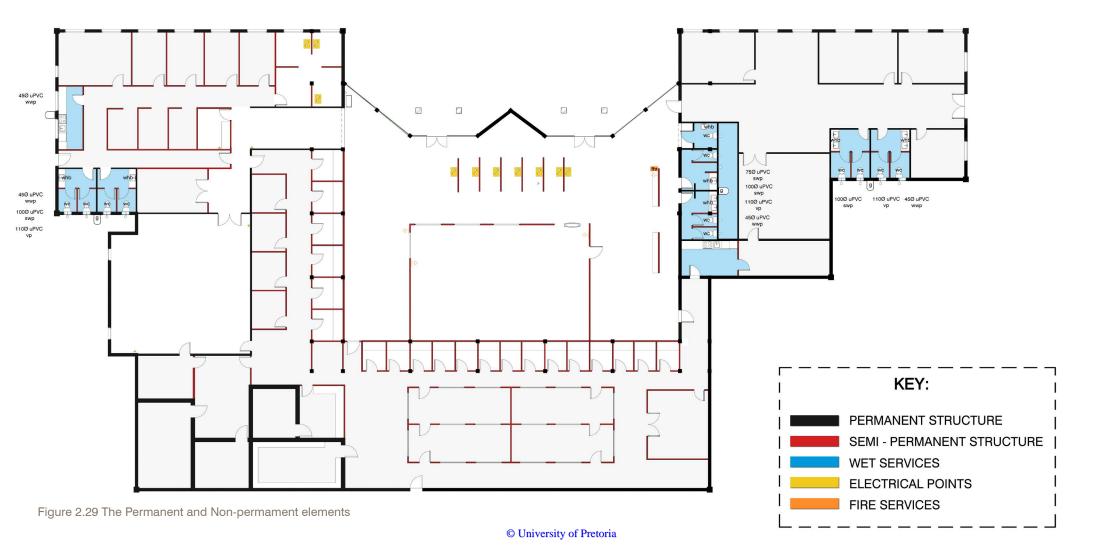




Figure 2.30 The Permanent and Non-permament elements Section

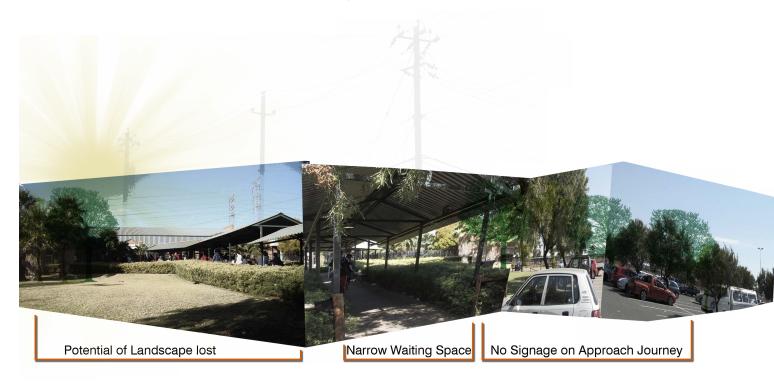




Figure 2.32 The Permanent and Non-permament elements 3D

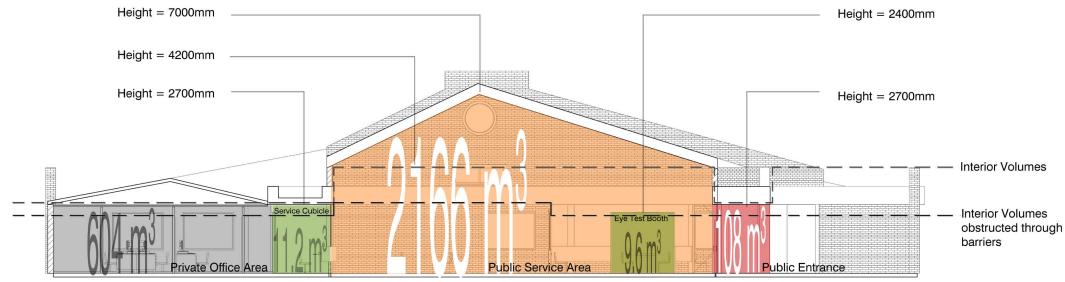


Figure 2.33 The Interior Volumes





Spatial Zones:

This study is done through comparing spatial areas to amount of people each serves. Specified areas within this building don't provide enough space for the amount of people they need to serve, even if the public are restricted to a certain rate per interval, while other areas have too much space per people allocated to use them. The zoning analysis makes this clear through using graphics to portray this phenomenon. This sheds important light on the need for a new zoning strategy.

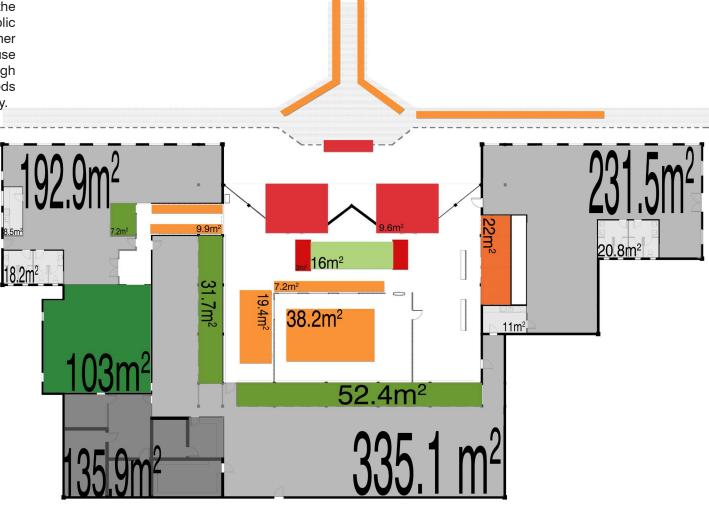
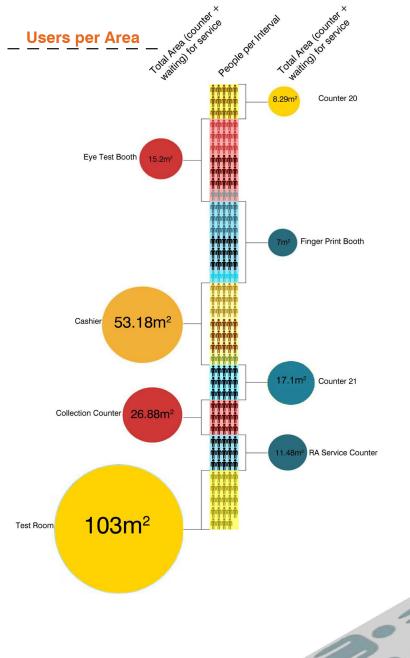




Figure 2.35 Interior Spatial Zones



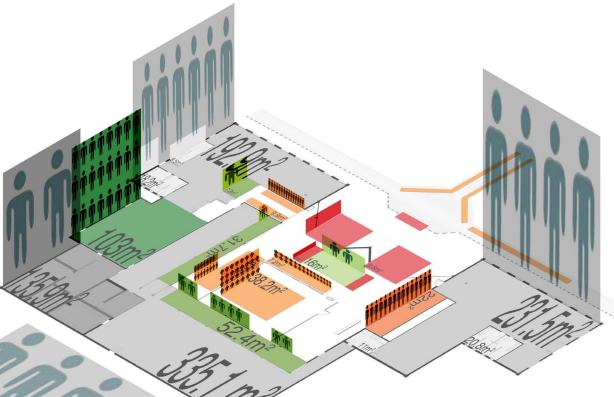


Figure 2.36 The Number of Users Per Area

The analysis outlined in this chapter gives a vivid understanding of the physical parameters that cause an uncooperative relationship between user and building, and opens up many possible platforms for solutions. Viewing the Tshwane Licensing Department in its different parts and systems allowed a much deeper understanding to the problem at hand. As can be seen through all three parts of the analysis there are definite pitfalls in the department buildings and these will become the starting point for the design solution.

Part One analysed the administration and identity. The administration systems in place are functioning but definitely not at full potential. The Licensing Department identity is non-existent and a new identity can be developed with the design proposal.

Part Two used various methods to develop an assessment tool to evaluate the existing service delivery condition of the four sites. This analysis brought to light where the most intervention is needed in these buildings. By studying all four sites in comparison it identified the universal problems of the Tshwane Licensing Department, and therefore a need for a universal solution.

Part Three looked at The Centurion Licensing Department, the site chosen for the design intervention. Breaking the analysis down into the observational framework opens up the relationship between user, space and object. It highlights what currently works and where definite changes need to be made.





Theoretical Premise

This chapter aims to develop an understanding of the theories applicable to the real world problem and to develop a design language or guideline that stems from this understanding.

Human-centred design is one of the main principles of design thinking. The theoretical approach will therefore be driven by this human-centred mentality and the theories investigated will take into account the multidimensional aspects of the user's behaviour and perception.

There is a vast amount of research that has been completed within the human behavioural sciences, however, when it comes to design this information has not yet been formatted into an approach that can be applied (Deasy 1985:9). The research in this study will guide the pragmatic nature of this study and convert these behavioural characteristics into a design language.

There are five human-centred theories and models that will be investigated in order to develop a design language for the real world problem. These theories also relate to the study of cooperation between service building (environment) and user (experience). A broad overview is seen in Table 3.1.



Table 3.1 A Theory Overview

THEORY	The Mehrabian Russell Model	The Environmental Psychology Theory	The Behaviourist Theory	The Proxemics Theory	The Perception of Waiting Theory
SEMINAL AUTHORS	Albert Mehrabian and James A. Russell (1974)	Kurt Lewin (1936)	Burrhus Frederic Skinner (1938)	Edward Twitchell Hall (1966)	Julie Baker and Michaelle Cameron (1996)
MAJOR PREMISE	This model links emotional reaction (user) to the load (complexity or intensity) of an environment. These reactions in return produce different types of behaviour (in Rengel 2008:18)	Environmental psychology is a field of study that examines the interrelationship between environments and human affect, cognition and behaviour (De Young 2013)	Behaviourists believe that our responses to environmental stimuli shape our behaviours (Cherry 2012)	The theory of Proxemics is the study of the human use of space within the context of culture (Brown 2011)	There is a relationship between service environment and the users emotional, cognitive, and physiological responses, which will affect their reactions and behaviours (Bittner in Baker & Cameron 1996:339)
KEY CONCEPTS	-Arousal -Pleasure -Dominance	-Environments (stressors) -Behavioural Responses -Design and Psychology	-Stimulus -Operant Conditioning -Positive reinforcement	-Interpersonal Distance -Hidden Dimensions	-Perception of time -Perception of service
RELEVANCE FOR DESIGN	Designing for the user's emotional responses through environmental elements.	Designing elements that can be used to build comprehensive information patterns.	Designing interiors with stimuli that are positive in order to affect and condition the user's behaviour.	Designing for parameters beyond a user's cognitive space bubble.	Interior elements designed into a space to increase the meaning of space and to increase user experience.



Developed by Albert Mehrabian and James Russel this model hypothesises that humans have three primary emotional responses to an environment (Kopec 2012: 28). The model links emotional reaction (user) to the load (complexity or intensity) of an environment (Rengel 2008:29). These reactions in return produce different types of behaviour. The chain of events occurs as follows: (1) a given environment is experienced by a person; (2) the person's processing of the conditions presented by the place and situation; (3) the person's behavioural reaction. The three emotional factors are (Rengel 2008:29):

- Arousal: refers to the overall level of stimulation that is experienced within an environment. An environment may be exciting (causing an increase in heart level or blood pressure) or relaxing (causing sleepiness or sluggishness).
- Pleasure: refers to the amount of pleasure derived from an environment. The scale here varies from contentment to annoyance or depression.
- Dominance: refers to the degree of control one feels in relation to a specific situation.

Variables that affect a person's response include environmental factors such as light, temperature, objects and cues (Kopec 2012: 28). Kopec (2012: 28) highlights the importance of this model through maintaining that the opposite of dominance is vulnerability and uncertainty and therefore it is applicable as people need to feel some kind of control over their environment. The next sections deal with sub theories and terms that apply to the three primary emotions.

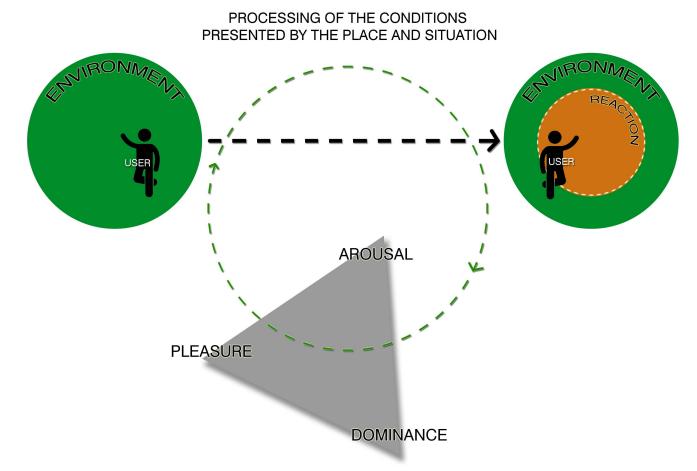


Figure 3.1 The Mehrabian-Russell Model explained (adapted from Rengel 2007:29)



3.3.1 The Arousal Theory:

"The Yerkes-Dodson law, this states that simple tasks require a high level of arousal to get the motivation to do them, while difficult tasks require low arousal to get the proper motivation" (Answers 2013).

This law points out that people need mental arousal within a space to allow for motivation in order to function to a certain level (Changing Minds.Org 2013). This 'activation' motivates the user to achieve their necessary goals. Yet this stimulation needs to be controlled as over stimulation leads to stress (Changing Minds.Org 2013).

When activation levels are low performance within users decrease due to (1) lack of alertness; (2) dulling of the senses; and (3) limited muscular coordination. This leads to accidents and slower completion of tasks, boredom as well as seeking other tasks that will bring about stimulation (Changing Minds.Org 2013).

A simple example of how to design for this stimulation can be seen in a campaign done by Volkswagen. In 2009, Volkswagen started an initiative to generate interest in its 'Blue Motion Technologies', its new innovation that will reduce the environmental impact of its selected VW models without compromising on performance or the joy of driving (Fun Theory 2010). Instead of using a big advertising campaign Volkswagen developed 'The Fun Theory' to prove that the easiest way to change behaviour is through fun. The company then put the theory to test in three behavioural experiments. This theory exploded as more and more people started thinking and discussing ways to incorporate this theory in other ways. This has become much bigger than just a campaign for a brand but has become a way of thinking.

The case studies demonstrate that arousal stimuli within an interior can be used to encourage the user to do tasks that would normally be taxing to do. The Fun Theory is a good example of this. In terms of the Licensing Department there are usually long periods of waiting time where there are no stimulants for the user. Through designing stimulants that keep the user entertained, the interior could counter the mundane task at hand. Figures 3.2 to 3.4 are examples of the Fun Theory.

3.3.2 Dominance through Disclosure:

"If you allow visibility, you will make the process of understanding in a particular space easy" Roberto Rengel (2007:73).

Visual disclosure is the number, type and placement of view obstructing elements within an interior (Rengel 2007:73). This can occur within a space and beyond a space. 'Within' a space refers to the immediate surroundings whereas 'beyond' refers to spaces that can be revealed past the current occupied space (Rengel 2007:73). Disclosure provides orientation, focus and relief to the user within the building.

Visual disclosure allows the interior to relate spatial information to the user. This will allow orientation to move along the path to the sequence of spaces. Focus provides clarity as to the function or functions of the space. Relief is provided as a form of distraction to the user whether in terms of a focal area, surface or element (Rengel 2007:74). A comparison is made in Figure 3.5 and 3.6 between interiors with and without visual disclosure.



Volkswagen Piano Staircase, Odenplan Subway of Stockholm, Sweden.

This initiative was used to inspire subway users to exercise more. Before the installation it was recorded that 99% of people used the escalator instead of the stairs. After the piano staircase was installed 66% of people used the staircase instead of the escalator. The Fun theory.com states, "Fun can obviously change behaviour for the better" (2010).

World's Deepest Dustbin

This experiment was used to encourage more people to through away their rubbish. The rubbish bin was rigged with sensors so that when rubbish was put in it a cartoon like sound made the rubbish bin to appear very deep. In one day 72kg of rubbish was collected in the bin. It was 41kg more than in a normal bin just a short distance away (Fun Theory 2010).

Bottle Bank Arcade

In this experiment a recycling bottle bank was designed to appear as an arcade game. When users put the bottles in different slots they ranked up different points. Results recorded over one evening were that nearly one hundred people used the bank. Over the same period of time a nearby conventional bottle bank was only used twice (Fun Theory 2010).



Figure 3.2 Fun Theory - Piano Staircase



Figure 3.3 Fun Theory - Worlds deepest dustbin



Figure 3.4 Fun Theory - Bottle Bank Arcade



CCTV Zhejiang Reporter Station Offices, China, Daipu Architects, 2013





Figure 3.5 CCTV Zhejiang Reporter Station Offices (Good Visual Disclosure) (Dezeen 2014)

CCTV Zhejiang Reporter Station Offices, China, Daipu Architects, 2013:

This is an example of visual disclosure through means of transparent materials and partitioning. The transparency allows the user views across the interior as well as brings in natural light. The partitioning system is comprised of shelving and furniture and is open to allow views through it as well as at different heights to separate spaces but keep the users connected.

"No regular partition walls have been built, the new partition is composed of very light cabinet and one centimetre semi-transparent polycarbonate panel, while the furniture, stairs, handrails and bar counter all come up to constitute the partition system." Pu of Daipu Architects (Dezeen 2014)

Yandex Offices, Russia, Za Bor Architects, 2010:











Yandex Offices, Russia, Za Bor Architects, 2010:

This is an example of how dominance of an interior is minimised through partition and wall systems within an interior. The building is in the shape of a horse shoe therefore orientation is also no easy task. Wood and transparent materials are also used in this interior, however, the height and placement counteracts visual disclosure.

Figure 3.6 Yandex Offices (Poor Visual Disclosure) (Nokki 2011)



3.3.3 How this is relative to the design language:

As mentioned before Kopec (2012: 28) states that these emotions can be controlled through environmental elements such as light, temperature, objects and cues. These elements can become the key design aspects. These elements are also prevalent in the theories that follow and will be discussed subsequently. Activation can be brought about in a similar manner as shown by the Fun Theory. Finding ways to make mundane tasks fun to do will make the journey through the Licensing Department building and process a pleasure and alter positively the user's perception of time. Disclosure can be achieved through transparency. Whether this is through interior elements, materiality or just the sense knowing how the service is run. These will all provide a sense of control for the user in the surroundings.

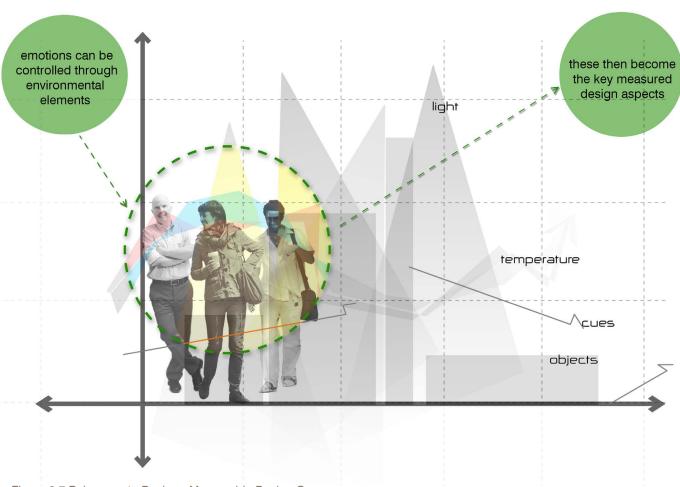


Figure 3.7 Relevance to Design - Measurable Design Cues

"Environmental psychology is a field of study that examines the interrelationship between environments and human affect, cognition and behaviour" (De Young 2013).

Particularly important is the user's behaviour (either positive or negative) that results from the interaction between user and environment (Nussbaumer 2009:26). Environmental Psychology not only focuses on the current influences but also uses methods of environmental modification to enhance preferred actions and reduce undesirable behaviours (Kopec 2012: 14). The following equation was made evident by Kurt Lewin (Dhere n.d):

Behaviour is a function of the person, the environments and the interaction between the two (B=P.E)

Kurt Lewin projected important aspects in terms of Environmental Psychology, principally the connection and dependence between theory and its application, and the need for research to be based on a real world scenario with field work (Dhere n.d.). He established a set of underlying principles as listed below:

- Holistic: Environmental Psychology suggests we need to widen our horizons and take a much more elaborate view of the interrelationship of cause/ effect/ influence;
- Relations between systems are important;
- Free will: Environmental psychologists assume that the behaviour of people is not determined only by their environments:
- Everyday natural settings: A crucial tenet of Environmental Psychology is that behaviour must happen in situ;
- "Problem" orientation of research: It has always been problem-oriented, using the theories, methods and findings of related disciplines (De Young 2013);
- Improving the environment: Part of Environmental Psychologyisconcerned with changing/manipulating

the environment for the common good;

-Inter/multi-disciplinary work: Environmental Psychology has within in it a diversity of approach, it borrows from and works with other disciplines (Tollev n.d)

Lewin's equation studies the relationship between person and environment. Raymond De Young (2013) looks at the person and places special emphasis on humans being information-processing creatures in the whole equation, and what this will implicate for encouraging reasonable behaviour in certain environmental situations. This leads to the notion that our environments are patterns of information and with humans being information-processing creatures we strive to remain proficient with information and thus our environment (De Young 2013). These patterns can become designed elements within an interior space, and this will allow more than just an aesthetic approach to the choices made within the interior's design. Humans have a need to understand environmental patterns, and through exploring new patterns increase their aptitude of the environment (De Young 2013). New patterns, therefore, do not delimit the realm of interior design but create new exciting possibilities to portray legibility to the buildings users. Rachel and Stephen Kaplan, professors of psychology at the University of Michigan (In De Young 2013), is of the opinion that the difference between reasonable and unreasonable behaviour can be partly explained by the environments (patterns) in which people are placed. They state that, "Humans have a remarkable facility to process information and that information and affect are in a close adaptive relationship with each other... people are more likely to be reasonable and cooperative in environments that support their informational needs". This reiterates the importance of the information that the interior portrays; through supplying the correct information interior designers have the means to affect the behaviour of the users. When the information supplied is incorrect or missing this has an effect on the user's behaviour as is seen in many service buildings in South Africa today.

- This information can be shown in different ways and De Young (2013) states that the three main domains of informational needs are as follows:

 (1) The need for building mental models: A mental model is a highly simplified version of reality that humans store in their head and use to make sense of things, to plan, to evaluate possibilities, to manage all everyday functioning;
- (2) The need for being effective: Being clear-headed enough to be capable of responding appropriately to the profusion of information around us, and the sense of competence that comes from knowing what may be possible and how to act; and
- (3) The need for meaningful action: a need to be an active part of the world around us, to be respected for our role and to do things that matter in the long run, the opportunity to make a useful contribution to a genuine problem.

"Bringing out the best in people is more likely when the environment supports understanding and exploration, develops competence, promotes a clear head and enables meaningful action" (De Young 2013). Currently Environmental Psychology is one of the only academic disciplines that bridges the gap between design and psychology. The points raised here demonstrate the intricate role the environment plays in both physiological and psychological well-being of its users (Kopec 2012: 14).



"Environmental psychology is concerned with space; from the intimate (personal space) through intermediate (proximal) spaces of the built environment (rooms, buildings, towns, cities etc), through to distant space involving study of the natural world, wildernesses and geographical space" (Tolley n.d.)



Figure 3.8 Environmental Psychology is concerned with INTERIOR space



3.4.1 How this is relative to the design language:

"Environmental psychology broadly looks at behavioural responses to patterns of stimuli that people experience if they selectively move about in the intervals which lie between objects that are desired and those that are not" Martin Tolley, The University of Northampton (n.d.).

The next question would be how to create informational patterns in the environment? The following elements are design elements that can be used to build comprehensive information patterns and assist the user in navigating and reading these patterns. These are the elements that will be focused on in designing informational patterns for users.

3.4.1.1 Wayfinding:

"Wayfinding systems offer guidance but do not dominate the user" Andreas Uebele (2009: 9).

Wayfinding as a process consults three major actions that are performed in this sequence: (1) Deciding what to do and how to do it, (2) Moving from decision to action, and (3) applying information obtained through sensory input and cognitive process (Kopec 2012: 104). This information obtained can be in the form of both pictorial and data-based representations and can form part of the design through the following ways:

- Visual Access: through allowing clear lines of sight either through transparent materials or heights of interior elements.
- Architectural Delineations: separation of areas through architectural elements.
- Signage and Numbering System: using symbols, numbers, colours or patterns as a code for navigation.
- Building Layout: through a logical and organized spatial layout.

Through using sufficient signage or symbols the user will be able to navigate themselves along their intended path and enter the space without trouble. Symbols, colour and directional signage are used to help with navigation through a new or unknown interior. This is necessary especially in environments with regard to time and the number of people (Uebele 2009: 9). When people need to get a task done in a certain amount of time they need to move from point A to B without any variations in between. Transparency through materiality can provide insight into what is going on inside to an outside viewer. By inducing a clear understanding of what the building is and how it will receive the user will play a role in how the user reacts within that building. These factors relate to a user's concern on entering a situation, whether they will be embarrassed or refused (Deasy 1985:34). The approach plays an important role in communication as a first point of contact on the path. When a user approaches a building there is a series of design questions that the building should answer, namely:

- What is it?
- What benefit does it offer me?
- How do I get in?
- What is inside?
- How will I be received?

(Deasy 1985:33)

Semantics and Symbols:

"The symbol is information; it assures you, for better or worse, of a known quantity" (Deasy 1985:33). Semantics deals with meaning and signification. Meanings of signs are influenced by the context in which they are received. (Abdullah and Hübner 2006: 14). Conditions that influence the meaning of a sign

- Surroundings
- Knowledge
- Culture

are:

- Social Circumstances
- Combination of Signs

Designers can use the ideas and objects to which people give semantic significance to carry out a reverse engineering, a way of investigating the sign and the way users apply it (Downs 2011). There is a lot of semantic significance with regard to symbols and spatial elements regarding road signs and objects. These are culturally bound (there are some differences in other countries) and are embedded in any driver's memory. Road symbols and pictograms should be understood by users of the Licensing Department and this could be the ideal basis for a new graphic language.

Signs are also adept to convey spatial messages. Users have certain cultural understandings of space and these could be conveyed through elements that have a connected meaning to that spatial aspect. "Spatial signs are designations by definition, therefore they point to and derive meaning from their location" Per Mollerup (2005:87). These spatial connections can be portrayed throughout the design solution through means of interventions and signage that link back to the graphic language.



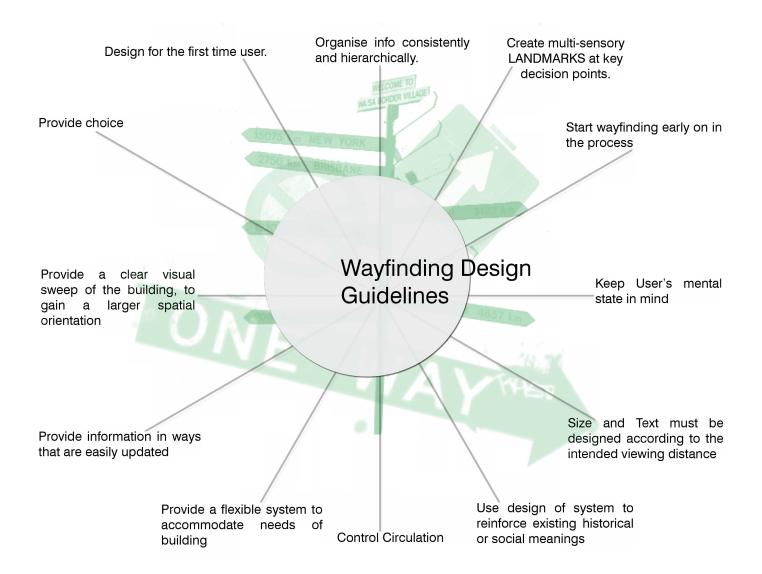


Figure 3.9 Wayfinding Mind Map



3.4.1.2 Colour:

"Architecture must not be colored for color's sake. Color is a property and the language of form, not a separate element or an intruder" (Duttmann et al 1981).

Colour is both an element of science and art. It is a vital element of design as colour evokes strong emotions within a user. Through scientific analysis it has been recognised that colour has an effect on the way people feel and behave (Resene n.d.). Angela Wright, renowned colour psychologist, states the following, "We know through decades of scientific research that around 80% of colour influence is based on instinct" (Hunter 2012). Colour not only has an effect on human emotion but on their perception of the room as well. Light, cool spaces appear expansive, whereas dark, warm spaces appear diminishing (USACE 1997:4.8). With regard to interior planes, strong warm colours shorten lower ceilings and walls, where cooler colours recede or raise them (USACE 1997:4.9). Strong valued colours on floor and ceilings will appear to unify a space. In terms of branding, colours play an important role in the identity and recognition of a brand.

Colour is an important communication tool. It is the first information we register in order to assess the elements around us (Resene n.d.). Colour can be assigned with a specific task or have a connection with a specific function. Therefore, colour becomes important in terms of legibility, orientation and navigation. Through associating certain tasks or services with colour this can be implemented into the design for branding or wayfinding purposes. Colour can be used to divide the whole interior into different parts through using the same design techniques with different colour applications.

Colour can be used to distinguish, contain, unite, equalize, and emphasize the design elements of a space (Ding and Guaralda 2011: 115). Therefore, colour and the associated functions/applications are

important in terms of the end result as it can influence how the user reacts within different parts of the interior.

3.4.1.3 Lighting:

People take in most sensory information through their eyes, and without the right amount of light that information would not be able to be read. Light also enables spatial perception and orientation as well as allows us to distinguish colour (Dietrich 2006:16).

Uneven illuminance is associated with low levels of noise and human activity whereas an even illuminance level relates to high levels of noise and human activity (Antonakaki in Ding and Guaralda 2011: 116). In terms of user performance high illumination shows an increase in reaction times and brain activity (Rowlands in Ding and Guaralda 2011: 116).

In a paper written by Ying Ding and Mirko Guaralda (2011: 116) they compare the effects that low and high light intensity have on users in a public space. They report that low light intensity levels create relaxing spaces and users tend to have more intimate conversations and speak quietly in lower light level background. Higher levels of light are psychologically and physically stimulating.

3.4.1.4 Form, Pattern and visual elements:

Form is an important element within an interior space, and it is where the three dimensional pattern comes into play. Form relies on the elements mentioned before but it also has a big impact on how these elements are perceived. Form can be static or can encourage movement, i.e. narrow long forms indicate movement where larger open forms indicate habitation (Rengel 2008:69). Form can also be strongly related to the identity that needs to be portrayed within an interior. Similar to semantics, forms can also portray certain meanings. Therefore, it is an ideal bearer of information to allow legibility of an interior space.

Pattern within a place could affect its legibility, and Augustine states that pattern is the repetition of form and is directly connected to colour (Ding and Guaralda 2011: 115). In public areas users feel more at ease and less confused to look at patterns that are mathematically similar to each other (Augustine in Ding and Guaralda 2011: 115). Therefore, to make pattern assy to desipher the Gestalt principles are the ideal. easy to decipher the Gestalt principles are the ideal guidelines. The Gestalt theories look at the human mind and behaviour as a whole (Cherry 2013) and tend to describe how people perceive and organize visual elements (Spokane Falls Community College 2013). Using a structuring element in designing the legibility of patterns will allow the user to portray the form and pattern within the interior with greater ease. The six principles are listed as follows (Soergaard 2005):

- Figure ground relationship: in perceiving a visual field some objects take a prominent role while others recede to the background.
- Symmetry: where the whole of a figure is perceived rather than the individual parts which make up the figure.
- Good continuation: occurs when the eye is compelled to move from one object to another.
- Closure: users perceptually close up, or complete objects that are not.
- Proximity: a collection of objects that are spaced closely together will be perceived as forming a group.
- Similarity: elements will be grouped perceptually if they are similar to one another.

+COLOUR TABLE

+ It is the second most powerful colour and is associated with honesty, devotion, hope, and harmony.

- + Instil feelings of calm, quiet, serenity, and comfort.
- + Image of dependability and loyalty. Number one choice for use in corporate branding.
- + Light relaxed and calming; Bright energizing and refreshing; Dark strength and reliability
- + Strong hues denote clear thought; lighter ones, mental focus.

- Can cause feelings of isolation and laziness.
- It can be over calming, depressing, and can lesson motivation.
- Can exude coldness and aloofness
- *To calm people, and reduce pain.
- *Slow the heartbeat, lower blood pressure, ease stress, and enable us to breathe more deeply.
- *An appetite suppressant.

- Can cause exhaustion, fear, aggression, and anger.

WARM COLC

+ The most powerful of colours.

Tend to induce excitement. However when used alone it can over stimulate resulting in

emotions of anger. Dark, warm spaces appear diminishing. With regard to interior planes, strong warm colours shorten lower

ceilings and walls.

- + Associated with strength, passion, sexuality, instinct, and vitality.
- + Instil the feelings of power and security.
- + Effective in a small space where we spend a shorter period of time. Short and quick exposures to red can be enough to give our energy levels a boost.

RED

- Can lead to irresponsible behaviour, nervousness, or restlessness.
- Feelings of deprivation (most likely when orange is combined with black) frustration, immaturity and lack of intellectual values
- *To treat problems like asthma, cold, digestion, thyroid problems, and to stimulate lactation.

- + Associated with joy, excitement, creativity, movement and ambition
- + A warming effect, and instil a feeling of playful energy, and celebration
- + Stimulates activity and appetite and encourages socialization.
- + Best used to stimulate a strong desire for an outcome. symbolic of endurance, strength an ambition

ORANGE

*Enhances metabolism + Associated

* Raises blood pressure, and

- + Associated light, purity, grace, cleanliness, innocence and tranquillity.
- + Can provide a background for other colours.
- + It aids mental clarity and encourages us to clear away clutter or remove any obstacles.
- + Gives a heightened perception of space.

- Too much white without relief can result in feelings of emptiness and isolation.
- Can feel unfriendly, sterile, and unapproachable.
- The negative effect of white on warm colours is to make them look and feel brash.

BROWN

- + It is useful in balancing out stronger colours, and because it is one of the most predominant hues in nature, it gives a sense of familiarity
- + Make us feel rooted and connected with the physical world.
- + Commonly used as a background colour.
- + It is a solid, reliable colour and most people find it quietly supportive.

- Can lesson a sense of vitality.
- Picking it wrong gives an impression of lack of humour and sophistication, and heaviness.

Table 3.2 The Colour Table (adapted from Chapman 2010; One Earth One Design 2007; Colour Affects n.d.; Marsden 2011; Peterson 2007; USACE 1997:4.8; Zorzini 2012)

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LOUR

GREEN

- +Associated with harmony, honesty, and balance and is connected with
- + It soothes and relaxes, and is therefore also a healing and reassuring colour.
- + Instil a feeling of acceptance and
- +Symbolizes growth and freshness.
- + can relieve people of any
- +The most restful colour for the

UNIVERSITEIT VAN PRETOR UNIVERSITY OF PRETOR YUNIBESITHI YA PRETOR Can lead to confusion and isolation, selfishness, jealousy, depression, indecision, and laziness.

*To ease pain, relieve stress,

*A good choice for children

- +Associated with meditation and inspire contemplation.
- +Soothing and tranquil colours. Violet is connected with insight, dignity, respect, intuition, and clairvoyance.
- +Great in areas for study, but should not be used in a busy or active room.

- Is linked to mental fatigue, and stagnation.
- Excessive use can create an introverted aura
- -Pitching it wrongly can scream decadence, suppression and inferiority, or appear cheap.
- *To reduce hunger, control

- Can cause excessive mental stimulation, feelings of detachment, and arguments.
- Or the wrong tone can prompt irrational behaviour. Induce fear, depression and anxiety.
- * Activates the motor nerves and can generate energy for muscles.
- Positive effects on the nervous system, gastrointestinal tract, and to treat arthritis, rheumatism, digestive problems, eczema, and constipation.

- + Most visible colour and the first colour the human eye notices
- + Instil positive, cheerful, energetic feelings.
- + Encourage flexibility and adaptability.
- + Associated with mental energy and activity, stimulating the left side of the brain.
- + Heightens awareness and creates clarity

Tend to induce excitement. However when used alone it can over stimulate resulting in emotions of anger. Dark, warm spaces appear diminishing. With regard to interior planes, strong warm colours shorten lower ceilings and walls.

> Good to mix with warm or cool pallets. Used as backgrounds it tends to tone down other bold Black creates colours. darker shade while white creates lighter tint

- + Timeless and glamorous.
- + Colour of emotional safety, efficiency, substance and excellence.
- + Psychologically, black creates protective barriers, as it totally absorbs all the other colours of the spectrum.
- Can be draining, negative, overwhelming or depressing. It can soak up energy and vitality.
- Represents oppression, coldness, seriousness and weight.
- It makes rooms seem smaller too.

GRE

- + Considered on the cool end of the colour spectrum.
- + Enhance creativity. It's the colour "around which creative people are most creative."
- + As a neutral, it provides an unobtrusive and stylish background
- + Light grevs can be used in place of white and dark greys can be used in place of black.
- + It can enhance the psychological response of the other colours it supports

- Heavy use usually indicates a lack of confidence and fear of exposure.
- Pure grey can be suppressive and depressing.
- Unless the precise tone is right, grey has a dampening effect on other colours used with it.

RAL \bigcirc



"Behaviourists believe that our responses to environmental stimuli shape our behaviours" (Cherry 2012)

Behaviourists believe that the environments we find ourselves in, past and present, cause us to learn to respond to stimuli in a certain way (Sammons n.d.). Behaviourists take on the Nurture side of the Nature-Nurture debate in believing that people are only born with a small number of innate stimulus responses, and that all of a person's complex behaviours are formed through learning as that person interacts with their environment (Sammons n.d.).

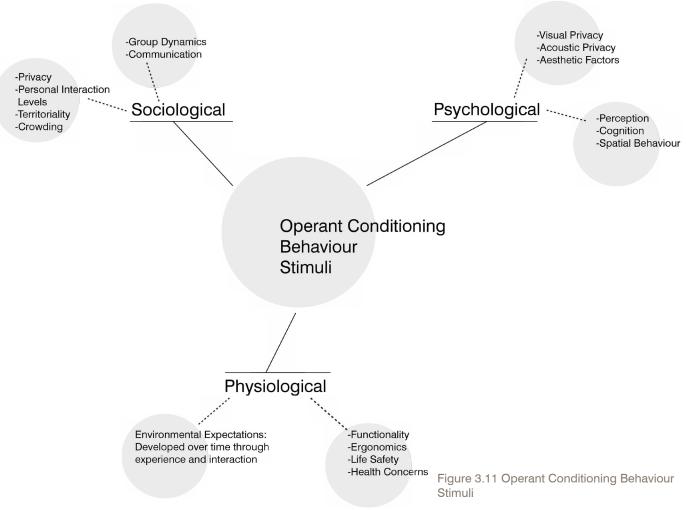
Behaviour is seen in terms of two factors, firstly, the stimuli that elicit it and, secondly, the events that caused the person to learn to respond to the stimulus in a certain way (Sammons n.d.). This learning occurs through two processes, classical conditioning and operant conditioning. Classical conditioning is the process by which two stimuli form an associated connection when they occur together, therefore the person will learn to produce an existing response to a new stimulus (Skinner 1965: 53; Sammons n.d.). In Operant conditioning it's about the process of new behaviours being formed through significant happenings. The word "operant" is used to describe it due to the fact that the behaviour operates upon the environment to cause consequences (Skinner 1965: 65). This works through reinforcement, so once the behaviour is produced it is followed by a reinforcement and thus the likelihood of the behaviour being repeated is strengthened (Sammons n.d.). This reinforcement works both ways, i.e. positive reinforcement will encourage certain behaviour whereas negative reinforcement (punishment) will decrease certain behaviour (Skinner 1965: 65). The underlying difference between the two learning methods is that classical conditioning allows for existing response whereas operant conditioning allows the ability to learn new responses (Sammons n.d.).

Skinner (1965: 66) states the following about Operant conditioning, "Through operant conditioning the environment builds the basic repertoire with which we keep our balance. A change in the environment—a new car, a new friend, a new field of interest, a new job, a new location—may find us unprepared, but our behaviour usually adjusts quickly as we acquire new responses and discard old".

This is the type of reaction that the proposed design is aiming for. In order for this reaction to occur, systems, attitudes and the interior layout within the service department will need to change. Operant conditioning is the best theory to explain this as current user behaviour will need to change but it won't occur without reinforcing it with new, efficient stimuli. The means behind these changes are the reinforcement and through the change the operant conditioning will transform the South African user's attitude and approach towards the service department. What this entails is both a service and interior design intervention.

3.5.1 How this is relative to the design language:

Sensation is our sensory organs gathering stimuli; perception is the conversion of stimuli to information (Kopec 2012: 65). Therefore, through highlighting selective stimuli in interior spaces we can prioritize the user experience. Both mental and physical stimuli are key factors in affecting a person's behaviour in an environment. This stimulus has been broken down into three categories, namely sociological, psychological and physiological, that can be influenced through physical elements in the interior (USACE 1997).





The theory of Proxemics is the study of the human use of space within the context of culture (Brown 2011).

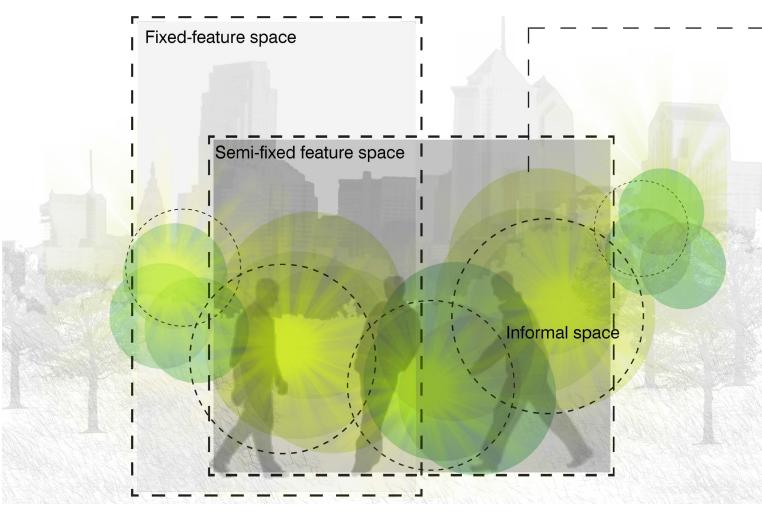
"Most communications are in themselves abstractions of events that occur on multiple levels many of which are not at first apparent" (Hall 1966:84) Hall sheds light on the many interrelated experiences that occur to and around the user whether he is aware of it or not. Sense of space in man is a combination of inputs namely visual, auditory, kinaesthetic, olfactory and thermal that is moulded by culture (Hall 1966: 181) and in essence people brought up in different cultures live in different sensory worlds. These senses of space are divided into three manifestations of the proxemics theory, preculture (physiological) infra-culture (behavioural) and micro-culture (Hall 1966:101). Micro-cultural is where proxemics observations take place and it consists of fixed-feature, semi-fixed-feature and informal space.

One translation of fixed-feature space can be a building. It is a basic way of governing behaviour and organising activities and artefacts of people (Hall 1966:106). Fixed-feature also differs between cultures but it is a great contributor to how behaviours are learnt, and a quote by Winston Churchill is quite fitting to this fact, "We shape our buildings and they shape us" (Hall 1966:106).

Semi-fixed feature space is the 'interiors within these buildings'. It can be classified into two types of spaces that occur within fixed-feature space. These are sociofugal spaces, spaces which tend to keep people apart and socio-petal spaces, spaces that tend to bring people together (Hall 1966:108). An experiment was done by Robert Sommer in a hospital cafeteria on this occurrence through monitoring people's conversations placed around a rectangular table. Certain layouts allowed conversation to take place whereas others prohibited it. The desired effect of these spaces is flexibility and congruence between the design and function of the space that allows a variety of spaces therefore giving the user the choice whether

to be involved or not as the occasion requires (Hall 1966:110).

Informal space is the spatial experience and thus where proxemics interactions take place (Hall 1966: 112). Hall refers to it as informal as it is unstated and not because it lacks form, he also states, "to misunderstand this significance is to invite disaster" (Hall 1966: 112).



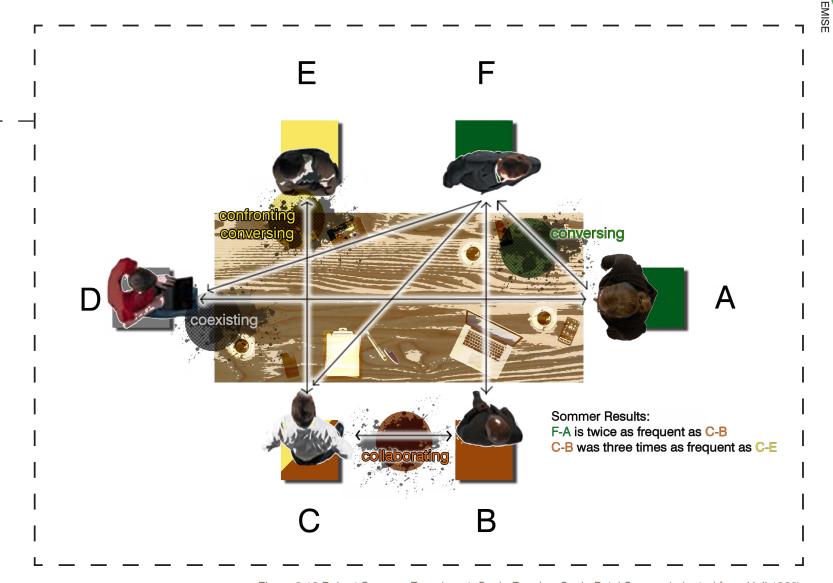


Figure 3.12 The Proxemic Micro Cultures

Figure 3.13 Robert Sommer Experiment: Socio Fugal vs Socio Petal Spaces (adapted from Hall 1966)



3.6.1 Distances in Man

'Some thirty inches from my nose
The frontier of my person goes,
And all the untilled air between
Is private pagus or demesne.
Stranger, unless with bedroom eyes
I beckon you to fraternize,
Beware of rudely crossing it:
I have no gun but I can spit.'
W.H. Auden, "Prologue the Birth of Architecture"
(in Hall 1966: 113)

This excerpt of Auden's poem, an Anglo-American poet, quoted in the Hidden Dimension is the ideal description of man's boundaries and distances in the proxemics theory. Regarding the informal space man has a uniform way of managing distances that occur between interactions with others. A less complex way of understanding this is to look at loudness of voice and how people feel towards each other at a certain time; whispering or feeling amorous brings you closer or anger and shouting means you are further apart (Hall 1966:113). These distances in man occur outside of people's awareness and this leads to two major pitfalls in peoples thinking of space: (1) For every effect there is a single and identifiable cause, and (2) Man's boundary begins and ends with his skin (Hall 1966:115). Hall has identified that man has four distances around him that are an extension of his personality, classified as intimate distance, personal distance, social distance and public distance (Hall 1966:128).

Ciprian Ardelean, an archaeologist from Romania, believes that the study of proxemics has high analytical potential and should be used as an auxiliary tool in the study and conceptualization of social space (2008: 167). Ardelean, however, challenges Hall's theory in certain areas, and these points he makes allows the theory of proxemics to have a more contemporary approach to space that is being created today. Firstly, he notes Hall's findings are very closely based on behavioural patterns of animals, and this is to an extent very limiting as people are made of more than just biological ties. Secondly, he challenges the ideas of set cultures as in this day and age cultures are universally spread and are no longer country specific (2008: 174). This rings true, especially in a country such as South Africa with many diverse cultures. To design culturally

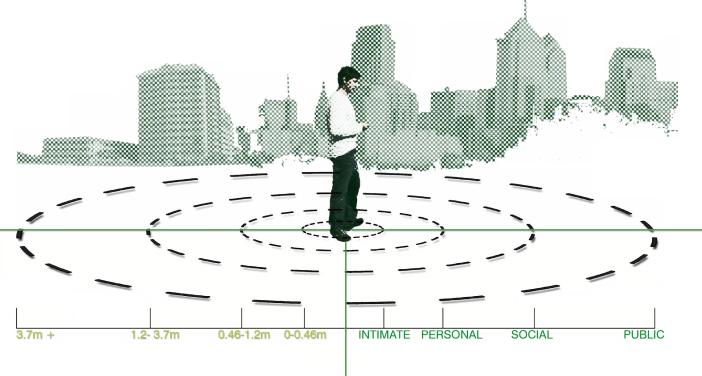


Figure 3.14 The Proxemic Distances in Man



specific spaces in terms of Hall's requirements would not be inclusive of the many other cultures that this country represents.

Ardelean's counter argument is one that states that proxemics should rather be based on the activities of the social groups and the requirements of involvement in that social space. This level of simplification is needed in order to make this theory applicable to multiple situations. What this allows then is the application of Hall's theories to a certain extent, and within a relevant social structure.

"His (user) space perception amplifies and focuses more on the specific elements related to the proper functioning of his productive activities" (Ardelean 2008: 185).

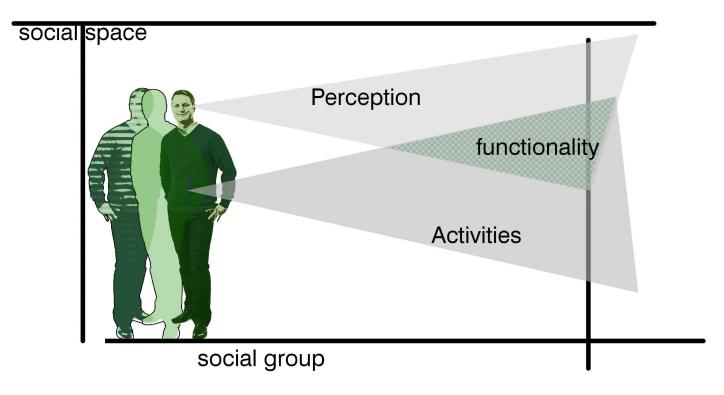


Figure 3.15 Productivity and Perception: Where they meet is where functionality lies



3.6.2 How this is relative to the design language:

"If however, one sees man surrounded by a series of invisible bubbles which have measurable dimensions, architecture can be seen in a new light" Edward T. Hall (1966:129).

Man's boundary does not begin and end with his skin. In the proxemics theory it is evident there are many factors that bear an influence that the common user is unaware of. These factors can be identified and used as design parameters. Using Ardelean's approach to proxemics permits the rules set out by Hall to be applied to social structures that occur within a South African culture. This social structure can be broken down further to apply to situations that happen within day to day South African life.

Khan and Kamal (2008: 40), also realised the shortcomings of Hall's proxemics model in terms of user demographic. They set up a model for Pakistani University culture according to Hall's eight proxemic dimensions to measure behaviour. They concur with Ardelean in terms of proxemics behaviour being dependent on culture as well as the social situation and the designed qualities of the setting (Khan & Kamel 2008: 40). The context of an environment also plays a big role in determining spatial requirements due to their difference in typology and use and therefore users adapt their individual differences according to this (Khan & Kamel 2008: 41).

Khan and Kamel have definitely exposed a shortcoming within this theory as it can only be applied loosely to the South African demographic due to our diverse cultural background. Creating a South African model would be a contemporary and much needed version of the Proxemics theory. Some of the principles can however still be applied and these will be used in the design investigation.

3.6.2.1 Hidden Zones in Offices

"The most important criterion is what people can do in the course of their work without bumping into something" (Hall 1966: 52). Hall identifies hidden areas in space that have an effect on how we view that space. Hidden zones in offices is an example of this. Through providing certain elements within the office space it will give a perception of how big or small it is. There are three hidden zones:

- The immediate work area of the desktop and chair:
- A series of points within arm's reach outside the area that is mentioned above:
- 3. Spaces marked as the limit reached when one pushes away from the desk to achieve a little distance from the work without getting up (Hall 1966:53-63).

Having only zone '1' the office automatically feels cramped. A combination of zone '1' and '2' the office will feel small. With zones '1', '2' and '3' the office will feel ample.

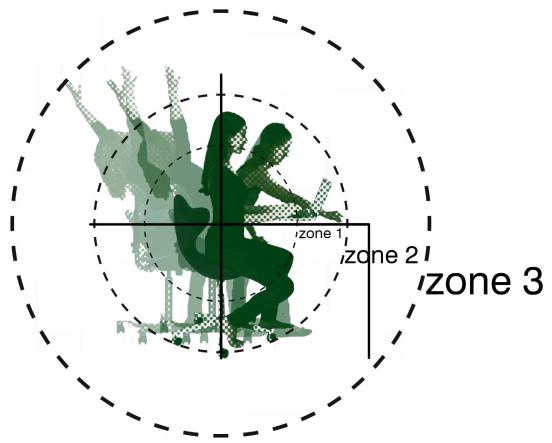


Figure 3.16 Hidden Zones in Office Areas



3.6.2.2 Hidden Zones in Waiting Areas

As made evident in the study done by Sommer, mentioned previously, there are certainly ways of designing spaces that invite user interaction and those that don't. A separate study done by Norman K. Booth (1983) looks at this phenomenon in terms of form in Public Space layouts. Booth's study looks at how different forms in spatial arrangements create sociofugal or socio-petal spaces. (Ding and Guaralda 2011: 117). Booth's study indicates that spatial arrangement is the principle of public space design; this principle's key factor being to improve public space (Ding and Guaralda 2011: 117). This study is done on a large scale in terms of landscape or architectural design intervention but if brought down to an intimate interior scale these terms could be applicable in creating the ideal public spaces within a service environment.

Figure 3.17 Booth's Interpretaion of Socio-Petal and Socio-Fugal Spaces: reflected in interior space (adapted from Booth in Ding and Guaralda 2011: 117)



A single form does not define nor create space; it is just an object in space.



One of the simplest and most commonly used means of achieving compositional order is placing forms at right angles to another, however this easily create monotonous public space



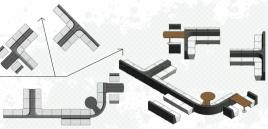
Given a more varied and complex design, the central public space can have a richer quality with a number of hidden or partly disguised subspaces to create a sense of mystery



A weak definition of space arises when forms are organized in a long row and there is no co-ordinate relationships between them



Booth's diagram showed the most straightforward means of creating a sense of public space is to group forms around a central space, a much stronger sensation of spatial arrangement therefore is made



Booth suggested creating a force for public entering to experience the public space, it encourages public to walk through, rather than pass it by.

"Waiting transpires mostly in the mind of the one who waits. It is the raised awareness of oneself and the surrounding space that the waiter has to encounter. The memory absorbs the space and generates associative meanings as one enters the journey of waiting" Lourette van der Westhuizen (2010:14).

In service situations customers regularly overestimate the amount of time they spend waiting, and through this perception of time increasing the customer satisfaction tends to decrease (Baker & Cameron 1996:338). Van der Westhuizen differentiates between physical time (public time) and physiological time (emotional connection) (2010:17). This physiological time is described as the time that is 'felt', this can sometimes be slow, and unwilling to pass and in this period the user's thoughts are consciously experienced (Van der Westhuizen 2010:17). Waiting time is therefore associated with physiological time or subjective time, how users feel or perceive the duration of time (Baker & Cameron 1996:338). The waiting duration could have a negative effect even on good service delivery.

Bittner (in Baker & Cameron 1996:339) states that there is a relationship between service environment and the user's emotional, cognitive, and physiological responses, which will affect their reactions and behaviours. Through this insight, the authors constructed a model to illustrate the influences of a service environment on perceived waiting time.

The theory of this model is based on the Mehrabian-Russell theory (as mentioned at the start of this chapter) that mediates a relationship between the physical environment and the user's response (Baker & Cameron 1996:339). This model is composed of this theory and the attribution theory and the cognitive timer model (Baker & Cameron 1996:339). However, the importance to be drawn from this model with regard to the design of the licensing department is the spatial aspects within this framework that relate

to ambient, design and social elements (Baker & Cameron 1996:340). These elements have an effect on the user's affective state (the interactions of pleasure and arousal), whether on a conscious level or not, in terms of positive and negative experiences (Baker & Cameron 1996:340). When a person is negatively affected, they wish for time to pass, therefore pay more attention to time, whereas a person that is affected positively, enjoys the current situation and pays less attention to the passage of time (Baker & Cameron 1996:340). Van der Westhuizen (2010:19) reiterates this by saying that "for the duration to become meaningful, the architecture should increase the level of information or order it provides". Architectural elements are seen as the mechanisms to be designed into a space to increase the level of meaning of that space and in turn enhancing user experience (Van der Westhuizen 2010:19).

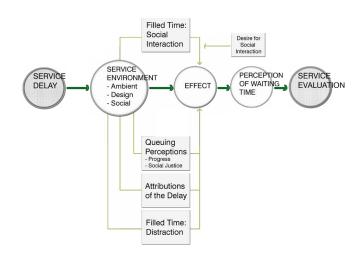


Figure 3.18 The Baker-Cameron Model of the Subjective Wait experience (Baker & Cameron 1996)

3.7.1 How this is relative to the design language:

In the Baker and Cameron model to illustrate the influences of a service environment on perceived waiting time, they highlighted these architectural mechanisms and applied certain findings to be followed when designing a service environment. These findings all relate to spatial aspects that can be designed within the interior and will be used as guidelines.

Van der Westhuizen further studies how individuals will wait in the environment. As seen in the table above there are different levels of social interaction that the users will expose themselves to, and different levels of interaction between the user and the environment. Van der Westhuizen (2010: 23) refers to the work of Henri Bergson (in Schweizer 2008:17) states: "The experience of duration in waiting is the experience of the time the waiter shares with things". Therefore, within an environment, depending on the type of public user, they will single out certain objects or elements within the environment through gazing (Van der Westhuizen 2010:23). These elements will provide stimulation for the user. Referring back to the types of users, Van der Westhuizen developed a model for her thesis and this will be used in this project as a guide. The users in this model can also be compared to the different types of personalities that prevail in people. Kopec (2012) summarised the different components of people's personality and what their design requirements are. By comparing this to Van der Westhuizen's waiting model, some design requirements can be deciphered for people in a waiting situation.



Table 3.3 Summarised Findings of the Model from Baker-Cameron (1996)

THE SERVICE E	NVIRONMENT, EFFECT, AND TIME PERCEPTION						
Lighting	Given a base level of lighting adequate for the task to be performed in the service environment, the higher the level of lighting above this base level, the more negative the effect and the longer the perception of waiting time duration.						
Temperature	The greater a temperature's distance beyond the range of comfort in a service environment, the more negative the effect and the lon perception of waiting time duration.						
Music	Music in a service environment that creates a positive effect in consumers will decrease perception of waiting time duration, whereas music that creates negative effect in consumers will increase perception of waiting time duration.						
	The higher the volume of music above a range of preference, the more negative the effect and the longer the perception of waiting time duration.						
Colour	The warmer (defined in terms of hue, brightness, and/or saturation) the colour in a service environment; the more negative the effect and the longer the perception of waiting time duration.						
Furnishings	The higher the level of discomfort of furnishings in a service environment, the more negative the effect and the longer the perception of waiting time duration.						
THE SERVICE E	NVIRONMENT, EFFECT, AND QUEUING PERCEPTION						
Spatial Layout	Spatial layout in a service environment that is designed to provide perception of queuing progress will be associated with more positive						
and Queuing Progress	effect and lower perception of waiting time duration than will spatial layout that does not provide perception of queuing progress.						
Spatial Layout and Social Justice	Spatial layout in a service environment that is designed to provide perception of social justice will be associated with more positive effect and lower perception of waiting time duration than will spatial layout that does not provide perception of social justice.						
THE SERVICE E	NVIRONMENT, ATTRIBUTION, AND TIME PERCEPTION						
Spatial Layout	Spatial layout in a service environment that is designed to minimize attributions of delay to the organization will be associated with more positive effect and lower perception of waiting time duration than will spatial layout that encourages attribution of delay to the organization.						
Employee Visibility	A service setting in which employees assisting customers are made as visible as possible will be associated with more positive effect and lower perception of waiting time duration than will a service setting in which employees are visible but not serving customers.						
THE SERVICE E	NVIRONMENT, FILLED TIME, AND TIME PERCEPTION						
Furnishings and Distraction	Positively valenced, moderately distracting furnishings in a service environment will result in more positive effect and a lower perception of waiting time duration.						
Social Facilitation	The more other customers in a service environment are welcomed by consumers as contributing to the degree of filled time, the more positive the effect and the lower the perception of waiting time duration.						
Social Intrusion	The more other customers in a service environment are viewed by consumers as intrusive, the more negative the effect and the higher the perception of waiting time duration.						



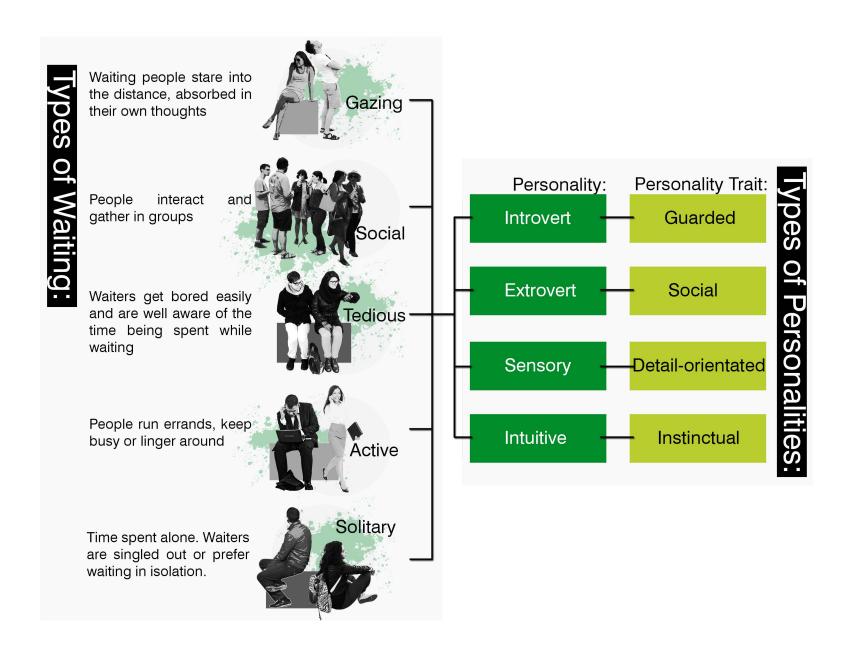


Figure 3.19 Types of Waiting and Personalities (adapted from Kopec 2012 and van der Westhuizen 2010)

The theories examined in this chapter have given great insight into the study of cooperation between service building (environment) and user (experience), and therefore allowed a clear understanding of how they relate to design. The body of theory gives clear indications and guidelines of how behavioural features can be translated into a physical design language and become a design parameter. Combining the usercentred approach in design thinking with theory shows aspects that wouldn't be prevalent in other theories and integrating these five theories allows for a holistic approach. The design guidelines produced in this chapter will be reflected in the proposed design of the Tshwane Licensing Department.





Concept + Design Concept + Design Development

This chapter is the consolidation of analysis and theory to develop a design solution to the problem stated in chapter one. The analysis, covered in chapter two, identified the key problem areas that need to be addressed through a design proposal. The theoretical premise, developed in chapter three, forms design guidelines that will be adhered to in the design proposal in order to achieve the required results. A systematic approach is adopted in order to take the design from concept to design solution and this is applied through design thinking.

The concept for the designed intervention is developed from the deliverables set out for this dissertation. The deliverables of this project were stated in chapter one and will be re-iterated again.

4.2.1 The Deliverables:

Due to the public service nature of the buildings, they cannot be closed for long periods of time to be retrofitted with a new interior. Service buildings in South Africa also have a temporal nature and tend to move from buildings often. In terms of the Tshwane Licensing Department it's a case of the former and not the latter. Therefore, the design intervention needs to be unconventional in the sense that it does not require heavy reconstruction of the building and can be installed in a very short period of time. The deliverables in Figure 4.1 will need to make up this intervention.

4.2.2 Kit of Parts

Essentially what this intervention calls for is a Kit of Parts. This approach has been used in many different scales within interior design and two examples that were studied are Marti Guixe's Walk in Progress concept for the Camper stores, and Elonah O'Niel's shelter unit from her MInt (Prof) dissertation, Grace under Pressure.

4.2.3 Plug-in-terior

"The connection of peripherals... whereby a device only needs to be connected in order to be configured to work perfectly" (Definition of Plug and Play from Merriam-Webster, 2014).

This concept is derived from the term 'plug-and-play' due to the need for an adaptable system. The interior intervention needs to 'plug in to' the existing building in order to comply with the deliverables stated for this project. This 'plug in' process needs to be executed

with great flexibility and allow for various configurations according to the specific needs of the site. 'Plug in' also refers to the connection of multi-disciplinary approaches to the implementation of service design and information design. The research and analysis done will plug into the design language in order to create an environment that influences both public user and service provider to behave in a positive way. Figure 4.5 is a mind map expanding on the concept.



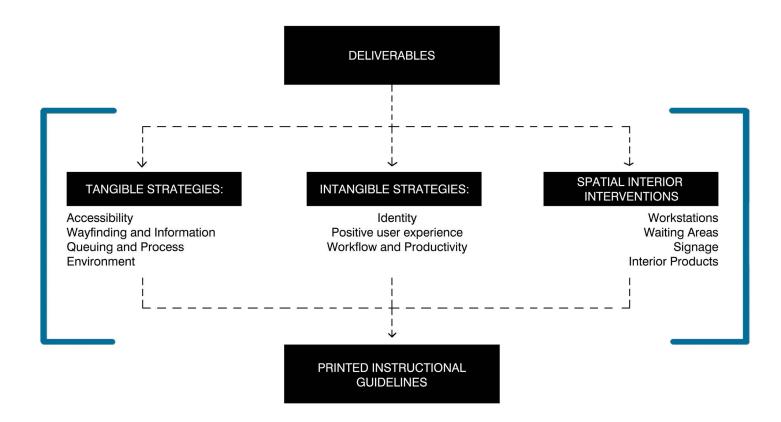


Figure 4.1 The Project Deliverables



"Walk in Progress" - Camper and Martí Guixé, 2000

A new interior model for Camper was developed by Marti Guixe to meet financial and time requirements. Due to most of Camper's stores being in very prominent areas, they cannot afford to close while refurbishing (Vernet & De Wit 2007: 151-154).

Guixe developed an interior with a set of instruction cards that can be understood by any layman. These instructions cover all aspects of retail design from facades, walls and lighting to all the displays. Essentially it is a store start-up Kit of Parts.

"It is a set of rules more than a definite model, a standard that can adapt to various situations. The idea is simple: to make a temporary and interactive shop that can be opened quickly and function efficiently until the final design is ready" (Vernet & De Wit 2007: 151-154). These interiors still express the unique Camper identity while giving them a new formula to deal with the pressure due to their vast success.

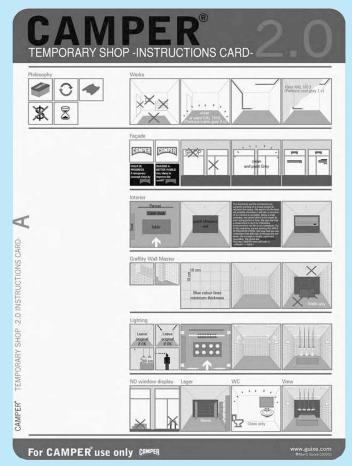


Figure 4.2 Marti Guixe's Walk in Progress Instruction Cards

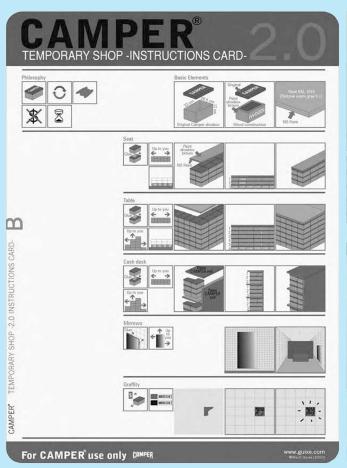






Figure 4.3 Walk in Progress Interior Shots



"Grace under Pressure", Elonah O'Niel, MInt (Prof) dissertation, 2009

In her dissertation, Elonah O'Niel develops a shelter unit made up of a Kit of Parts. It was developed as part of an informed South African analysis, with context, legislation and typology forming the design guidelines. The project proposes a shelter unit that in the event of disaster or displacement will:

- be small enough to fit into a room if property is damaged
- be flexible enough to be used as an extension to host families
- be set up inside a collective centre
- cluster together to form part of a rural/ planned camp (O'Niel 2009)

Materiality, junctions and the Kit of Part typology were thoroughly investigated in this design in order to obtain the design solution. The functionality and scale of this project allow its success within the context that it is proposed.

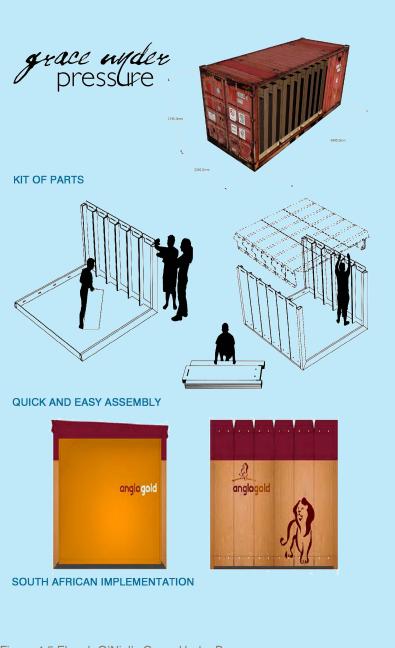


Figure 4.5 Elonah O'Niel's Grace Under Pressure



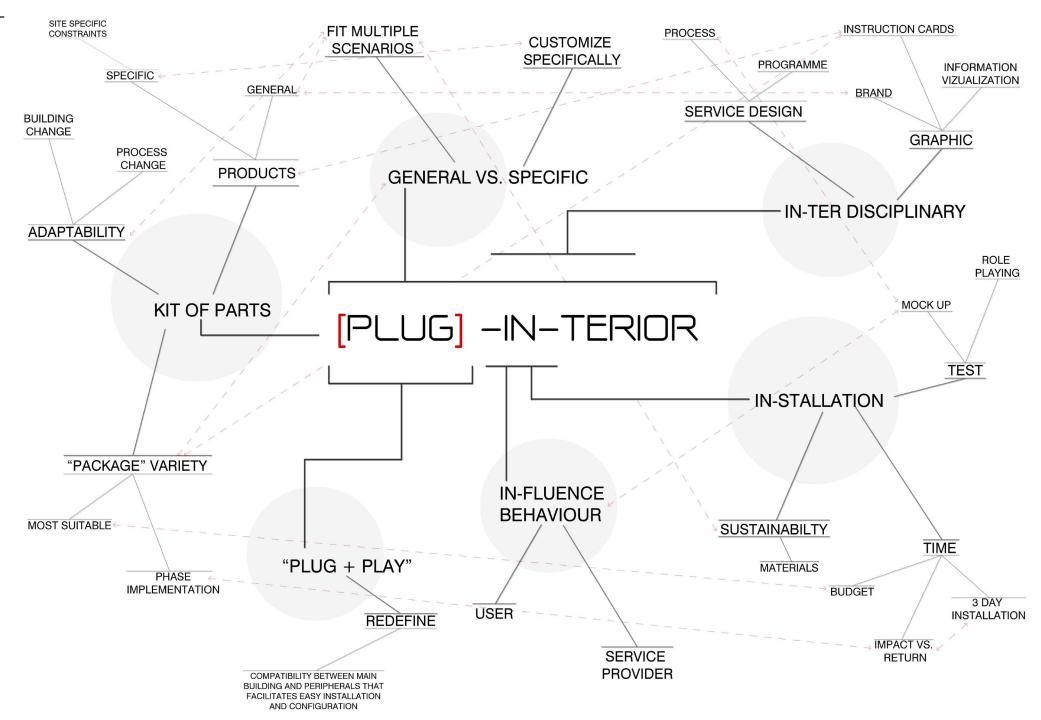


Figure 4.5 Plug-in-terior Concept Mindmap

+CONCEPT + DESIGN DEVELOPMENT

4.3 CONCEPT APPLIED THROUGH DESIGN THINKING

Design Thinking is the chosen methodology for this study but it is also used in developing the concept into a designed proposal. Design Thinking has five principles which guide the systematic application of the concept into a process that evolves into design. The five principles are derived from Grant Young's (2010) paper, Design Thinking and Sustainability, and are:

- Human Centred: places people at the centre of the design approach;
- Research-based: research applied in order to respond to design challenges;
- Broader Contextual View: expanding the design to a wider frame of reference:
- Collaborative and Multi-disciplinary: co-design methods to involve an array of stakeholders;
- Iterative Delivery and Prototyping: to evaluate and evolve:

These five principles are used in order to define Design Thinking as a viable methodology in searching for a design solution. These principles will be used as sub headings throughout this chapter to clearly define where Design Thinking has influenced the decisions and steps to be followed. For more detail refer back to Figure 1.12 in Chapter 1(c.f page 14)

4.3.1 Maintaining Building before Intervention

The interiors of the four sites within this project differ vastly in terms of layout, finishes, building construction and general aesthetics. In order for a universal design intervention to be developed the buildings will need to undergo a process that allows the interior shell to be the same. For the Tshwane Licencing Department's identity to be established there will need to be a definite visual connection between its four sites. African Bank has developed a type of universal formula that is applied to all their banking outlets allowing for this visual connection to identity to succeed.

An approach is needed in order to allow buildings + some sort of similarity before the intervention takes place. A material and colour analysis is undertaken on all four existing sites (c.f figure 4.9). The analysis shows there is a failure between brand and interior and therefore there is no graphic or design language. In order for the proposed design intervention to make this new connection, the existing buildings will need to undergo a process to facilitate this. This approach is adapted from Fred Scott's (2008), On Altering Architecture, and is comprised of four steps: stripping back; enabling works; making good; and new works (refer to table 4.1). The result will be interiors that are similar and ready to receive the universal intervention. The application of Scott's approach will be elaborated in Chapter 5.



"Studio Sixteen had to work within the perimeters of the new Corporate Identity Manual presented by African Bank to formulate a retail experience which accentuated the strength of the new graphic language." (Studio Sixteen 2006)

African Bank has undergone a process to change and improve its corporate brand and thus needed an interior to match its new identity. This change incorporates an interior that needed to suit the needs of a commercial banking environment. Studio Sixteen designed a generic kit so that future roll out into other branches could be possible. Colour is used to contrast between different services zones, in this case with mint green and rust brown which were used for a calming effect. The brand's colours of blue and green are prominent in the interior as well. Form is used in terms of introducing curved elements to break away from the standard rigid elements within the interior. Form also creates a sense of intimacy with dropped bulkheads over the service area compared to extended volumes in other areas (Studio Sixteen 2006).

Africa Bank's interior spaces are not typical of a banking environment as the interior is very open and transparent. The use of elements such as transparent dividers achieved this effect. As you enter any of African Bank's branches you are immediately faced with a reception desk; hard to miss as the desks are lit up with the bright green colour of the African Bank Logo. This layout and interior finishing is generated in all outlets as is seen in figure 4.7.

African Bank, Studio Sixteen, date unknown





Figure 4.6 African Bank Interior Shots at Clearwater Mall and Somerset Mall (Clearwater Mall 2009; Someset Mall n.d.)

Somerset Mall













Figure 4.7 African Bank Store Fronts (Goldfields Mall 2012; Highveld Mall 2012; Mall @ Reds 2014; Mountain Mill Shopping Centre n.d.; Somerset Mall n.d.; Tyger Valley Centre 2014)



Table 4.1 Approach to Buildings on all four sites

Steps:	Scott's Definition (2008:108):	Application on Sites:		
1. Stripping Back	"the stripping out of rotted fabric"	- Remove all posters, blinds, furniture, finishes and counters		
2. Making Good	"where the original fabric is repaired and replaced"	 Paint / treat any existing plastered walls / drywalls Paint / treat any trimmings Paint / treat all ceilings 		
3. Enabling Works	"demolition and removal of those parts that would prevent the implementation of new work"	- Remove specified non-structural walls		
4. New Works	"the implementation of the proposed changes"	 Add new translucent partition walls Add new doors Implement grid for space planning Add new flooring surface 		

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4.3.2 Plug-in Grid

"Plug-in" elements require a base to plug in to. Therefore, a flexible base is required in order to adapt to the ever changing idea of the building. A grid system is implemented into the interior to act as this base. The grid design language is derived from a road map that uses a grid system for legibility and as a quick referencing system. That same idea is to be carried through to the design of this interior and therefore the grid is used as an organizational tool with multiple functions. These are:

- -A system to 'plug in' to
- -A system to add modularity
- -A system to standardise materials
- -A system to merge separate locations
- -A system to connect thresholds
- -A system to carry reticulation

The grid iteration started with the idea of the grid to be suspended from above. The reasoning for this decision was to counteract the busy foot traffic that moves through the building on the floor surface. Applying the grid from the top down allows the interior intervention greater liberty as the floor finishes are all different in the different buildings. Essentially the grid was made to 'plug-in' from the top. Uptown Kids retail store was studied as it implements a grid design in a similar fashion.



Uptown Kids Retail Store, Elliott + Associates Architects, Oklahoma, USA, 2010.

"The concept is 'kids clothes as art,' and art needs a frame, so the grid is an evolution of that idea." (ArchDaily 2012)

The entire interior is made up of a grid, which structures the display of children's clothing. The grid allows for flexibility in display, and the display is the most important function within this interior. The logo and the grid also relate back to the idea of a map with the intention of taking users (mostly parents and children) to places they have never seen before (ArchDaily 2012).

This grid is both functional and aesthetic. It allows freedom in the display as it is only a backdrop to structure whatever is happening within the interior. It is also, however, striking enough to stand alone if there is no display at that point in time. The grid is found on all three interior planes, walls, floor and ceiling and connects the interior as a whole. The systematic organizational functionality is what is most appealing.

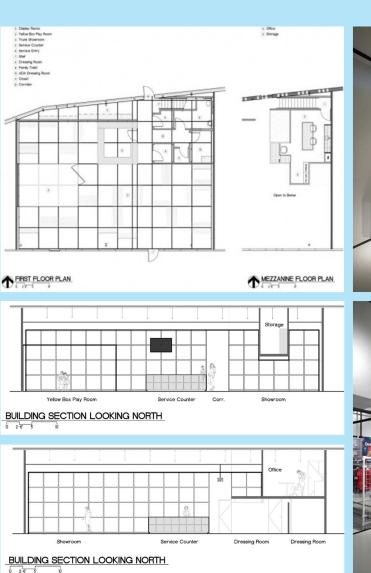








Figure 4.8 Uptown Kids Plans, Sections and Interior Shots



The grid implemented is 1200mm x 1200mm in size. + A grid is developed as a structuring system in order to allow for exact planning in all four sites. The reasoning behind this approach is due to the variations in site and therefore a universal system is needed. The grid is applicable to all four sites.

All interior categorizations classified in chapter two, namely thresholds, service and amenities, are designed in modularity according to these grid dimensions (these will be discussed later on in this chapter). Therefore

the modular sizing allows these areas to plug in to the grid where applicable in all four sites. Through iteration and prototyping the grid changed from being mostly installed to be mostly assumed. (See table 4.2)



Table 4.2 The Grid Iteration

GRID TYPE	Drawbacks	Benefits
Full Sized Grid	 Construction Time Construction stability and weight Cost Labour Skill Existing Ceiling type 	- Fully Adaptable Interior - Full service Reticulation
Segmented Grid	 Less adaptable interior Labour Skill Existing Ceiling type Full service Reticulation 	- Construction time
Central Spine Grid	- Full service Reticulation	 Fully Adaptable Interior Construction time Labour Skill Construction Stability and weight Cost



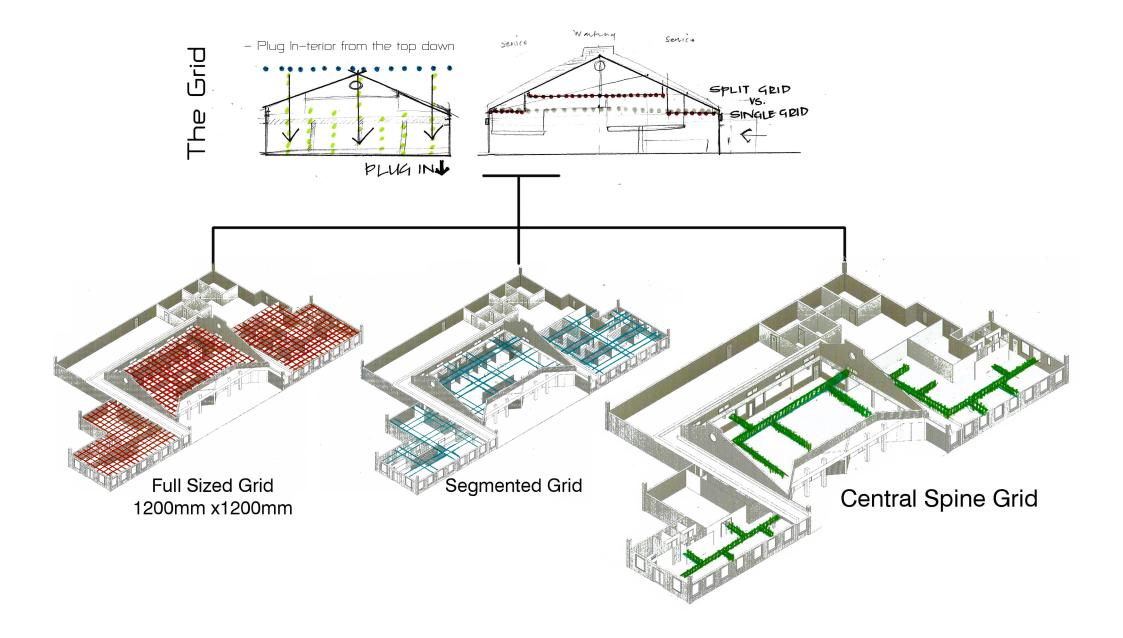


Figure 4.9 The Grid Iteration



4.3.3 Timeline/Matrix

Time is both a constraint and an opportunity in this project. It's constraining because it limits intervention possibilities to an extent due to construction times. It's an opportunity because it allows for other innovative ways for this challenge to be met.

A timeline is established in order to plot the implementation of the new interior and systems into the Tshwane Licencing Department. The construction times lead from Thursday to Monday in order to minimise on the amount or working days that could be lost.

A design matrix is developed in order to provide more depth to this intervention. It defines the application of the design in its different varieties so as to make clear what each specific element needs. It plots all the actions that need to take place and in what order this will need to happen. What this matrix establishes is which party is responsible for what action and when in the bigger timeline it will need to take place.

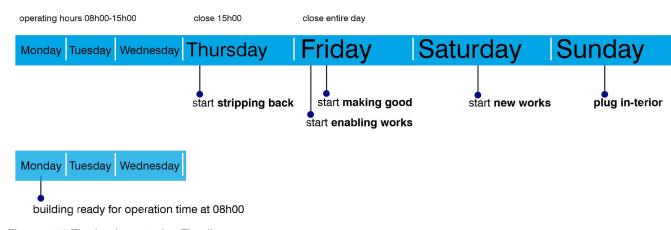


Figure 4.10 The Implementation Timeline

Table 4.3 The Design Matrix

DESIGN	+Phase 1	+Phase 2	+Phase 3	+Phase4	+Phase 5	+Phase 6			
Roll Players:									
INTERIOR DESIGNER	INTERIOR DESIGNER	INTERIOR DESIGNER Specialised Construction Team	Specialised Construction Team	INTERIOR DESIGNER with User and Service Provider	INTERIOR DESIGNER Landscape Architect	Service Provider with Instructions			
THRESHOLD: APPROACH ENTRANCE/ RECEPTION	Space Planning	Approach to Building (Scott Strategy)	Implement Action Time Table	TEST (Post Occupancy Evaluation)	Threshold and Edge (Landscape)	Change of Surfaces			
SERVICES: SERVICE STATIONS TESTING STATIONS	Space Planning	Approach to Building (Scott Strategy)	Implement Action Time Table	TEST (Post Occupancy Evaluation)		Change of Surfaces			
AMENITIES: WAITING AREAS WC'S AUXILIARY	Space Planning	Approach to Building (Scott Strategy)	Implement Action Time Table	TEST (Post Occupancy Evaluation)	Threshold and Edge (Landscape)	Change of Surfaces			



4.4.1 New Service Catergories

"The task of programming in the design profession is still conditional, highly determined by the nature of the project, the architects involved, the paying client and the building users" Vimolsiddhi Horayangkura (2012:33)

The existing program in this building will be used as a foundation in the design intervention as the same service will need to be applied. The existing process, however, will need to adapt to a new layout and new technology. The existing process as seen analysed in Chapter 2 highlighted weaknesses within the current system. The Tshwane Licensing Department offers a number of services to the public, however, the interior layout does not specify these individually and users requiring different services have to use the same service points and equipment (counters and booths), which leads to confusion, bottlenecking and crowding in the interior. The process itself is also unclear and remains unknown due to the lack of signage. Users to this building are also not frequent, therefore the process can't get memorised.

The services provided are:

- Renewals of Driver's Licence
- Renewals of PrDP (Professional Driving Permit)
- Learner's Licence Test
- Driver's Licence Test
- Exchange of Foreign Driver's Licence tests
- Motor Vehicle Renewals
- Registration and Licensing of Motor Vehicles

Services that the licensing department offers often involve visiting the building in more than one visit (i.e. making driver's test appointment; doing the driver's test; picking up the driver's licence). In the building's current layout these different processes and facilities overlap, such as the eye test and fingerprint booth or

the fact that one counter gets used for more than one specific service. A study on all the different actions for each of these services was undertaken in order to outline how to simplify and split up the processes. This method was obtained from studying Designit's approach as observed in Chapter 2. The services are able to be split into five new categories which will form separate entities within the design, namely:

Apply: This is to 'apply' for any sort of test or conversion. This counter will deal with applying for and setting dates for tests (learner's, driver's and instructor's certificate) and applying for PrDP.

Test: This is where users with a test date (for both learner's, drivers and instructor's licences) will arrive at their specified time and come and write/do their test.

Renew: This is for the renewal of any DLTC (driver's licence testing centre) applications. These include driver's licence card renewals, PrDP renewals and the conversion of foreign licences.

Collect: This will be for the collection of any of the new licences (obtained through tests) and of the renewed licences (obtained through renewal).

Vehicle: This pertains to the RA (Registration Authority) side of the Tshwane Licensing Department. This deals with the motor vehicles and includes the actions of registration and licensing of motor vehicles and motor vehicle renewals.

Separating the processes allows for common services to be allocated to each one of these sectors. These common services include eye tests, fingerprint and ID photo booths and cashiers. Their separation increases ease of use as the process will be a lot simpler for the user to understand.

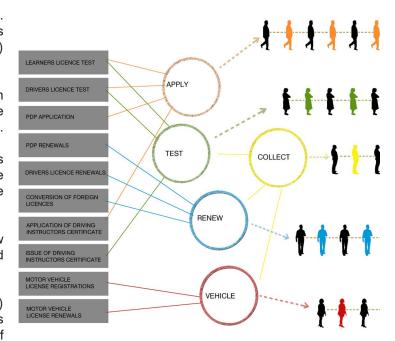


Figure 4.11 The New Service Categories



4.4.2 New Process Development:

Designit's service design approach guided the rethinking of the service process (see chapter 2). Based on analysis of the strengths and weaknesses of the existing touchpoints, new user touch points are established and designed.

'Touch Points' illustrate where the public user interacts with the building, the service provider and with other public users. The new touch points are are:

Threshold: Consists of any elements of entrance, exit and initial approach in the building. The interior aspects are entrance area and reception area.

Service: Is comprised of all interior elements where the service is provided. These take place in different formats namely, service counters, testing booths and test writing rooms.

Amenities: Covers all extra areas that assist in the service being delivered. The main amenities are the waiting areas and the WCs, whereas secondary or auxiliary amenities include services such as the provision of refreshments, ATM Facilities and photocopying.

A classification of current service areas are established as being either 'shared' or 'fixed'. Shared service areas are those that are used by more than one service process, i.e. eye test booths used by many services such as driver's licence renewals, tests and applying for tests. Fixed services areas are specific to one task (i.e. counter 3 only deals with RA enquiries).

Looking at the current user touch points (service areas) in the Tshwane Licensing Department most service areas are all shared and this is what leads to the confusion and crowding as previously mentioned. The next step is to challenge this idea and develop a new service strategy.

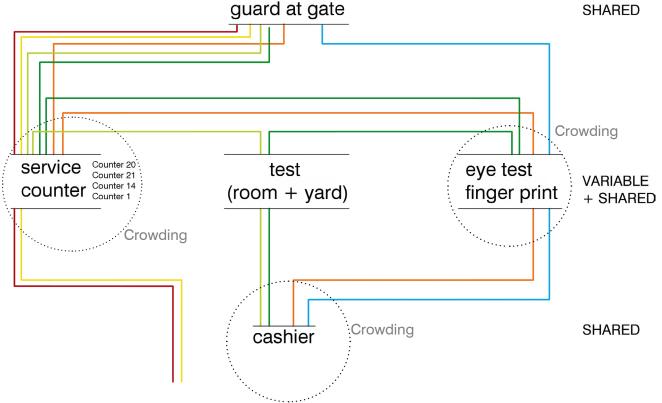


Figure 4.12 The Existing Process indicating shared and variable areas and where crowding occurs



The resulting approach is to change all the shared service areas to fixed service areas. This, and the implementation of the five service categories, will allow for five different areas within the interior, all with their own service equipment (cashiers and biometric equipment).

This enables a clear understanding of the process, however, there are still a number of steps within this process as it still complies somewhat with the existing service procedures set up by the Tshwane Licensing Department. These service procedures work on a paper-based system. The paperwork work must be completed throughout the procedure until it is processed once handed in to the cashier.

The amended service procedures, should simplify the processes taking place at specific points and therefore reduce the number of service areas required. By introducing new equipment the paper-based system can become electronic, saving time and resources. New equipment to be used is the South African developed tool called The Green Box. This technology allows all user information to be scanned in (such as ID Book, Driver's Licence, fingerprints and signature) as well as take ID photos.

A simple process is required in order to enable a successful roll out strategy. The IEC, South Africa's Independent Electoral Commission is faced with this task every four years during the election period, and serves as a precednt discussed in figure 4.14.

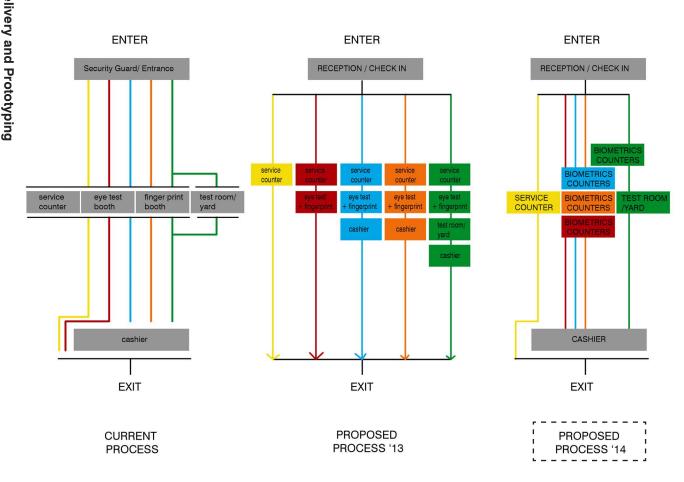


Figure 4.13 Iteration of Shared and Variable Services areas within the Licensing Department



IEC

The IEC is responsible for all the logistics of running elections, including the setting up of voting stations in the most remote rural areas, installing telecommunications facilities and setting up a computer network to link all voting stations (South Africa Info n.d). Voting takes place on one day only and each station serves between 500 and 3000 voters (ANC 2014).

Voting process:

- 1. Voter's ID scanned in queue.
- 2. Inside the voting station, voter's name is crossed off the voters roll.
- 3. Voter's hand is examined to see if it has been marked, then hand marked.

- 4. Voter gets ballot paper for the national elections and one for the provincial elections.
- 5. An official stamp is put on the back of the ballot papers.
- 6. The voter goes to the voting booth and makes a cross for one party on each of the ballot papers, folds the ballot papers and puts them into correct ballot boxes.

The IEC rolls out voting stations all over the country that follow the same process with the same layout. These stations are fully functional one day and packed up the next. This flexibility within the layout provides this ease of use. The process is clearly defined which allows the layout to function properly. This precedent highlights the importance of a suitable process.

Party Agent

Figure 4.14 IEC Voting Process

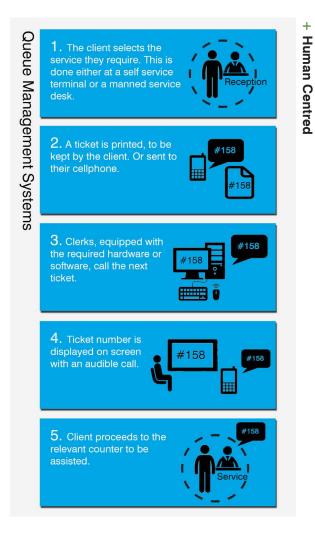
Through simplifying the process, it reduces the user's confusion while accessing the building. The new process allows for fewer steps within the process, which saves users time. Using new technology reduces users' preparation as they do not need to make certified copies or take ID photos.

Queue Management Systems will be implemented in order to control the waiting process within the building. How these systems work are illustrated in figure 4.15 and the system has the following benefits (Pinnacle AV 2014):

- Reduce waiting times for clients
- Ensure that clients are forwarded to the correct service counter the first time
- Generate reports to show average waiting times, identify problem services or counters, and much more.
- Eliminate or greatly reduce the frustration of standing in a seemingly endless queue

The last point highlights what it would mean to the public user as it provides peace of mind that they will indeed be served and not wait in a queue only to be told to leave as it is closing time. There are service providers in South Africa that have implemented such systems and have found great success. The two providers that were studied are SARS and Multichoice.





SARS Garsfontein Branch, Pretoria, Gauteng, Designer Unknown

The South African Revenue Service (SARS) is an administrative organ of the state, according to the South African Revenue Service Act 34 of 1997(SA Find it 2013). The interior of the SARS Garsfontein branch is crisp and clean. It is the interior layout and process of this branch that is most intriguing. After you enter this building through a security entrance you are lead straight to the reception counter. Here you state your query and give your cell phone number. Your appropriate queue number is then sent to your cell phone. The waiting area is located in the centre of the interior and all the service counters and

service rooms can be viewed from here. Your queue number will then appear on a screen, a number of which are placed all around the room, directing you to your service counter.

Service counters are transparent, but closed off with transparent dividers to allow for privacy. The service counters are also open to the back so the patron can see what is happening behind them. Photocopiers are allocated along this passage to save time. Service offices are more private than the counters, but still transparent as a section of the dividing wall is made with transparent material. Transparency allows the user comfort as they can see when the employees are busy and therefore can see when it will be their turn to be attended to.

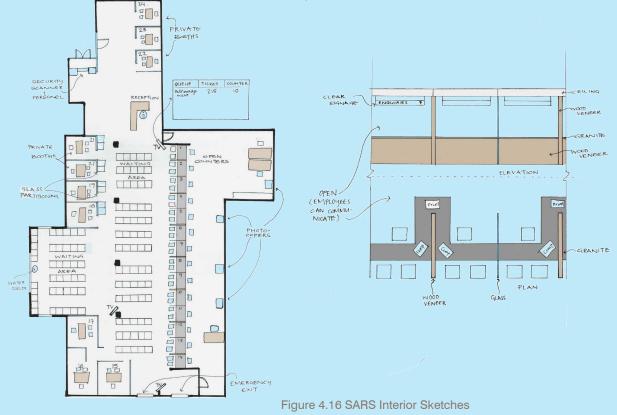


Figure 4.15 Queue Management Systems



Multichoice - Aerial Excellence, Pretoria, **Gauteng, Designer Unknown**

MultiChoice South Africa's activities involve the operation of Pay-Television and internet subscriber platforms. The MultiChoice South Africa group includes the digital satellite Pay-Television business (DStv), which has been in operation since 1995. (MultiChoice n.d.)

The customer service process works with a ticketing system. The receptionists are able to gauge the waiting time and inform the user of this. The user can leave and come back with the same ticket number later and will get placed into the gueue at their original place. The interior is open and users can clearly distinguish the specified counters.













Figure 4.17 Multichoice Interior Shots

4.4.3 New Thresholds

As discussed previously, thresholdS consist of any elements of entrance, exit and initial approach in the building. In the process systme all the processing and paperwork is left with the cashiers. As different services all share the same cashiers it is not surprising that paperwork can get confused or lost. In the proposed model for 2013 the cashiers were split so that each service area had its own cashier. However, in the proposed model for 2014 the cashier becomes a 'threshold' and therefore is shared by all the services once again. Therefore, in terms of processing of documentation, this will need to move to the service counter itself. Paperwork will be processed at the counter and only once paid for at the cashier will it be finalised in the system.

The new process provides a reception area where + visitors are able to check in and receive a service number. The reception serves all five of the services. However, through iteration the reception can be split. This split occurs through providing different entrances This split occurs through providing different entrances where the building allows it. The test areas more or less have a known number of visitors per day due to the set schedule for testing and therefore can be provided with their own reception or check in areas, whereas the other services have an unknown number of visitors, so a more general reception area will need to be provided.



As mentioned in Chapter 2, the City of Tshwane has a strong, new brand identity; however, this is not reflected in its service building. The brand identity for the City of Tshwane forms an umbrella brand for all its various divisions such as the bus services and the various municipal services. The Licensing department, however, needs an individual identity and the branding exercise looks at how to tie into this umbrella brand yet stand alone. A successful example of this is work done by James Goggin for the London DLR, as well as the development of an independent Tshwane brand under the Umbrella Logo by the Tshwane Economic Development Agency.

London's Docklands Light Railway (DLR) Public Arts Program Branding, James Goggin, 2007

DLR launched the public arts program on the occasion of the DLR's 20th anniversary, with the goal of extending the privilege of seeing art to everyone riding on the train. Rather than introduce a completely new symbol for the DLR Public Arts Program, Goggin explored variations on the familiar transport for London identity. (Skolos and Wedell 2012:52-53)

"The idea with this logo was an attempt to do nothing as a graphic designer. I would take the given elements handed to me as part of the brief and then simply rearrange them – a kind of Duchampian ready approach where existing elements are re-contextualized." James Goggin (Skolos and Wedell 2012:52-53)

Tshwane Economic Development Agency (TEDA), Designer and date Unknown

TEDA is a revitalised municipal entity that was registered in 2006. As an initiative funded by the City of Tshwane, TEDA undertakes the city's directives and operates on projects stipulated by the city and those that it finds on its own. TEDA is responsible to its key shareholder, the City of Tshwane, and is directed by the board, while its executive management is responsible for the day-to-day running of the company (Frontier Market Intelligence 2012).

As with the previous precedent, TEDA's logo is incorporated into the City of Tshwane's branding identity through using similar forms and the same colours. It allows both a connection to the umbrella brand and an individual identity to be formed.

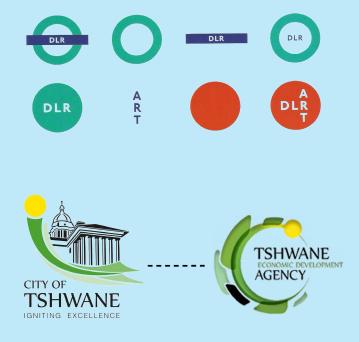


Figure 4.18 The DLR ART and TEDA identities closely relate to their host identities



4.5.1 Intersection not Path

rototyping

In the existing building the path of the user is defined by the linear seating areas that are lined up in front of the service point. This also restricts the users' movement as they have to remain in a queue otherwise they will lose their spot.

Defining a path throughout the interior was an important + starting point in the design process. However, in this process of finding the clearest method of indicating a path it became clear that the proposal was duplicating the negative effects of the current process in the building. Defining the path limits the visiting users and disallows free movement through the interior.

A new approach was to look at important points located on the said path. These points become the intersections throughout the building. These points become landmarks within the interior that provides the user with important information and a means of orientation.

The concept of plug and play is incorporated through the intersections in this design. The design, therefore, has evolved from a set path through the interior to a free path that has important points of intersection. These intersections allow design elements the flexibility to plug in and out of the system. The intersection becomes an important element in the design and this is reflected in the branding and in the structural junctions.



4.5.2 Identity and Wayfinding

As mentioned in Chapter 2, brand experience is an individual user's experience as they interact with the brand, where each interaction contributes to their overall perception of that brand (Landa 2006:9). These interactions can happen throughout the interior on different planes and the ideal is to harmonise these interactions. Brand identity should not stop at just a logo but should be incorporated throughout the interior through wayfinding and designed interior elements.

Brian Brandisi (Brandisi 2014), Brand Design Leader at Gensler, identifies the importance of proper brand design in environments as he refers here in reference to education facilities: "a good brand does more than establish a visual language; it creates an immersive experience for every person who interacts with the campus; it enhances the lives of students and faculty by uniting them under a shared sense of values and goals; it engenders loyalty with alumni, which as a result significantly can increase the percentage of donations". Generic approaches to interiors should be a thing of the past and every available visual landscape should now convey differentiated information to users (Brandisi 2014). This is achievable through comprehensive signage, the application of clear visual language, and design features that speak to the functionality of each space (Brandisi 2014). An example of this approach is a project completed by Gensler for the Latin American University of Sciences and Technology in Costa Rica.



CIT-ULACIT, Escazú, San José, Costa Rica Gensler, 2014

"When most colleges and universities consider their brands, they rarely venture beyond the design and implementation of a logo. Time and time again we have seen this "logo" inconsistently used on brochures and buildings without further thought into the potential power of branding" Brian Brandisi (Gensler 2014)

CIT, an extension of Latin American University of Sciences and Technology (ULACIT) offers training and certification in new technologies, project management and English language studies (Gensler 2014). CIT offers new and innovative approaches to teaching and Gensler needed to portray this through a new brand identity.

"A new environmental graphics program serves not only to guide students in wayfinding, but also to create a distinctive, energizing brand for the University" (Gensler 2014).

The brand concept is developed through pixels being viewed from different angles (i.e. 2D, 3D and perspective) which ties in with CIT's technical nature. It's a fresh new concept that has had a lot of success with attracting new students and developing new technologies (Gensler 2014).

The graphic and interior design elements portray all these goals that have been set above. The brand identity allows the students to connect with the brand and it is implemented not only in the logo but throughout the interior in wayfinding and designed elements. This is the approach required in the brand identity for the Tshwane Licensing Department.









ROOMS

Figure 4.19 Environmental graphics at CIT



The integration of the brand identity into the interior is important as it will provide a platform for users to connect and align themselves with the brand. It will also create a universal understanding throughout all the sites as each will provide this same look, feel and connection.

4.5.3 New brand identity

Many approaches were taken and explored in developing the brand identity. The brand identity is developed from the concept of the intersection. It is also influenced by form that is developed from traffic elements. Integration of these brand elements into the interior will allow for activation of the space as it provides cues within the interior as well as visual elements that familiarise the user with the function of the space. This activation will occur through graphics, objects and junctions.

The existing principles of the City of Tshwane logo are important and therefore implemented into the new logo as seen in figure 4.20

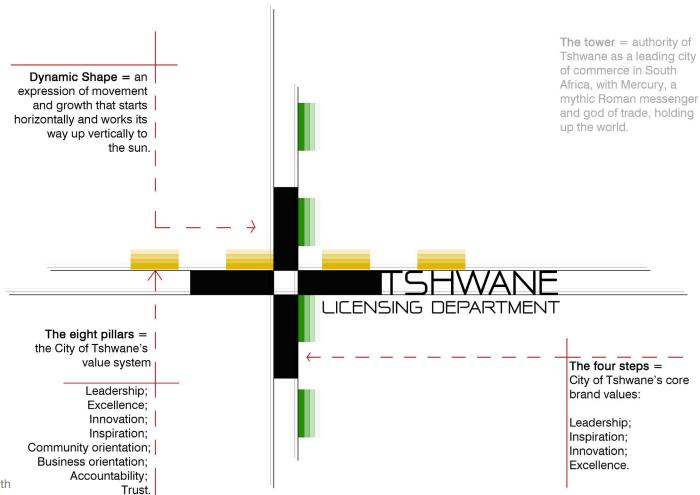


Figure 4.20 The new Tshwane Licensing Department Logo with the existing principles of the City of Tshwane logo

Through the consolidation of analysis and theory a design strategy has been developed to approach the problems defined in Chapter 1. Through exploring the principles of Design Thinking it allowed a process to be followed that dealt with the design implications that take place behind the scenes such as service and process. Using Service Design principles to iterate the current service process allowed for a clearer, simpler solution to be designed. Design Thinking also allowed the consolidation of analysis and theory to develop design generators.

The next chapter deals with the design generators that are developed through analysis, theory and process. These generators are used to develop the strategies used to design the three touch points within this project (threshold, service and amenities).

These generators are developed into design strategies that will be used to develop the design and technification further. It is through these strategies that the building will become a physical information system within the service environment.

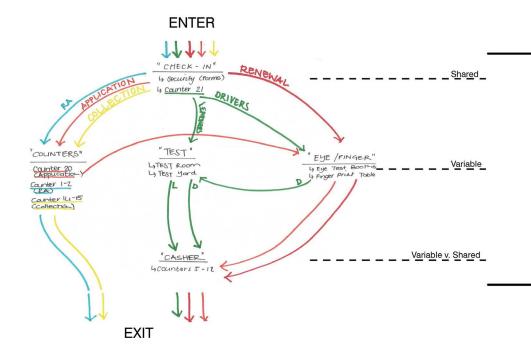


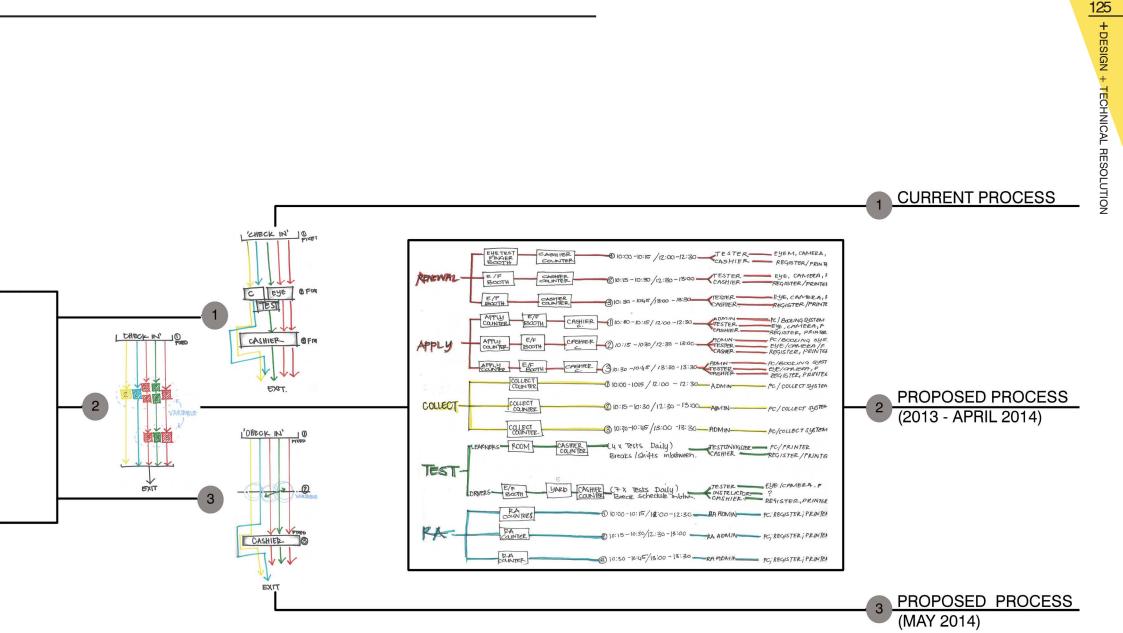


Design and Technica Design and Technica Resolution

This chapter is the consolidation of all the parts in order to achieve the deliverables that were set out at the start of the project. This chapter is comprised of two parts, an introduction to the design and technical approach and the design and technical presentation.

An iterative approach was taken to designing a new process. The steps in the process were minimised and designed to follow the most logical path. The process is laid out according to the three touch points, threshold, service and amenities, and the user will make contact with all of these throughout the process. The new process also allows for administration shifts as processing of paperwork moves from the cashiers to the service booths allowing less time to be taken up at the cashiers.





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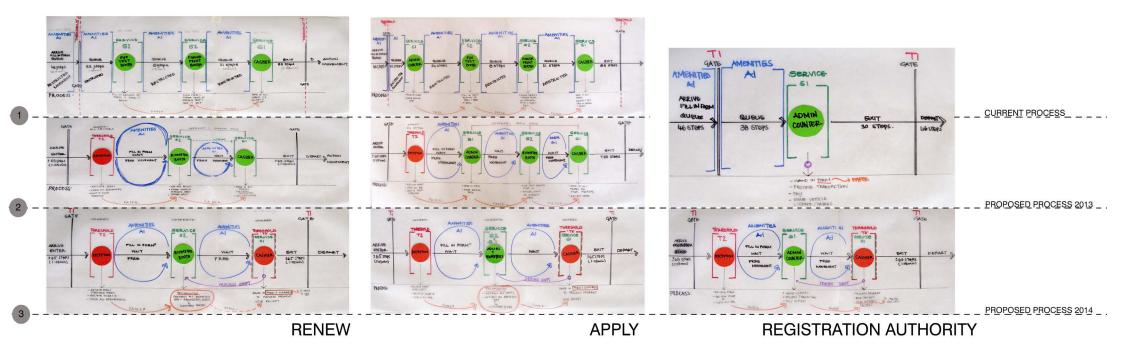


Figure 5.2 Biometric Process Iteration



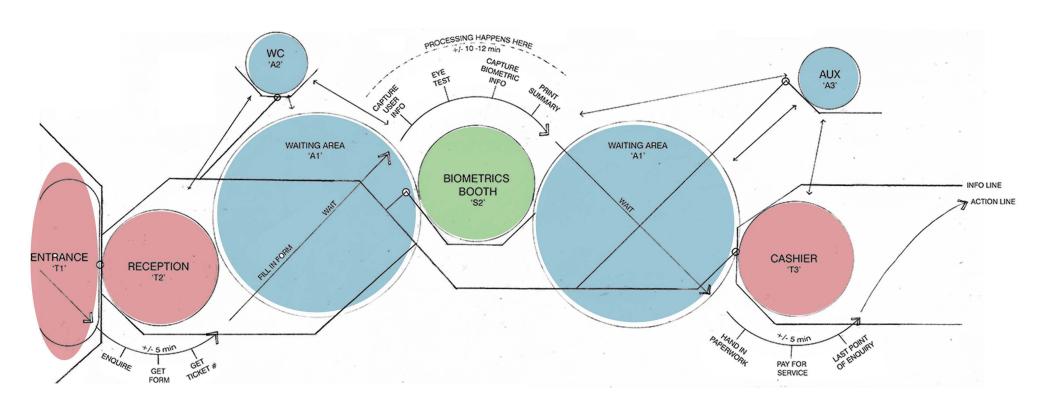


Figure 5.3 New Biometric Process



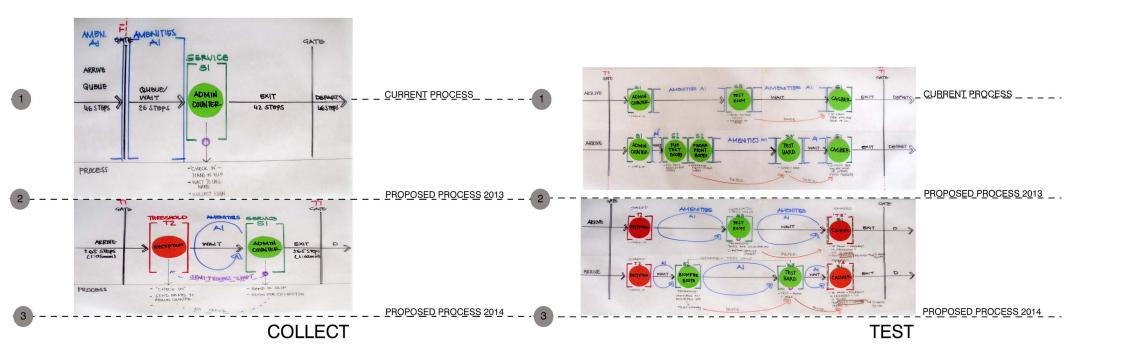
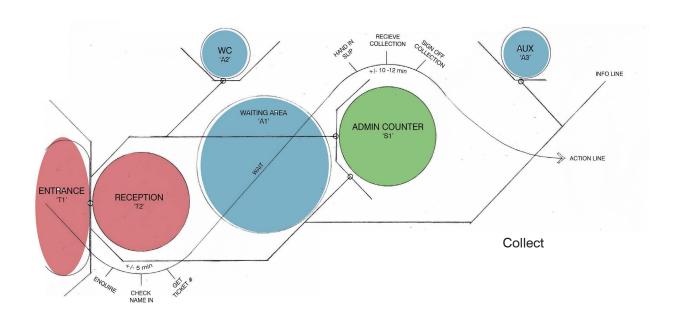


Figure 5.4 Test and Collection Iteration





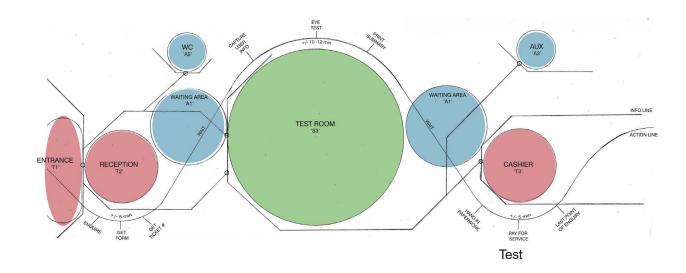


Figure 5.5 New Test and Collection Process



Approach to Buildings:

All four sites are different in terms of construction however a material analysis shows that there are a few similarities between the interiors. As stated in Chapter 4 a universal approach is needed for the Tshwane Licensing Department Buildings. The approach adapted from Fred Scott's (2008), on Altering Architecture, is showed in the following four steps: stripping back, making good, enabling works and new works. This approach deals with how to make them all appear similar as well as with maintaining the existing buildings.

Maintaining not demolishing (Design for Disassembly):

"The greenest building is the one already built"-Carl Elefante, AIA (Chiodo 2005)

An underlying intention of this project is to use existing buildings rather than to build new ones. The design intervention is aimed in such a way so that existing buildings can be maintained and re-used without expensive retrofits. The existing building is valuable in terms of its embodied energy. Therefore even if Service Departments find that they need to move, the design intervention should allow for this and be adaptable to another existing building. When areas start developing, existing buildings often become redundant which leads to their demolition. This redundancy is also brought about due to the change in the buildings function.

Stewart Brand (in Guy and Ciarimboli 2005:25) has defined six categories into which a building can be divided namely: Site; Structure; Skin; Services; Space plan and stuff. These lavers all have different life cycles. These layers are also always in constant friction due to changes such as building function and design interventions as one layer dictates the next (Guy and Ciarimboli 2005:25).

The intention with this investigation is to mitigate the tension between these layers so as to show the value in using an existing building. Due to changes with systems, processes and technology, branding and use, buildings always need to change in order to keep up with what the user needs. Therefore a degree of flexibility is needed. What this flexibility allows is:

- Adaptation to new spatial layouts
- Adaptation to new technological systems
- Adaptation to allow moving from one existing building to the next

Designing for Disassembly will allow for this kind of flexibility within the interior intervention proposed. Designing for Disassembly has three important factors to consider.

- The selection and use of materials
- The design of components and product architecture
- The selection and use of fasteners

The Centurion Licensing Department Building:

In terms of the Centurion Licensing Department analysis was done in Chapter 2 about the permanent and non-permanent features within the building. This includes furniture both fixed and moveable as well as building elements. In order for the design proposal to be successful in terms of the design strategies developed from analysis and theory, the building needs to be adjusted in a way to provide and open plan interior layout. The reasoning behind this will explained further in the design strategies (c.f Disclosure). The analysis done provided a clear indication of what can be 'stripped away' as per the approach to all sites. This can be seen in the Demolition Plan. The approach strategy is then further implemented through treating existing features and adding new elements as can be seen in the Ceiling Paint Plan, New Partitions Plan and The New Floor Finishes Plan.



This part of the chapter deals with the design generators that are developed through analysis, theory and process. These generators are used to develop the strategies used to design the three touch points within this project (threshold, service and amenities).

5.4.1 Modular:

A modular approach is required as the design will need to be configured to different types of spaces. Not only that, the design should allow for different configurations to be chosen as stated previously in the Matrix. Modularity will be influenced through the implied grid of 1200mm x 1200mm and it should take into consideration that volumes could differ from site to site. Loose fit systems that fit into an existing environment are the most suitable design elements to match the deliverables set out in this project. A project where these elements show great success is the Public Office Landscape by Fuseproject for Herman Miller.

Modularity is also implemented through designing according to nominal material sizes where possible to minimise waste when creating the modular system to be rolled out. Working with the 1200mm x 1200mm grid is flexible in terms of standard material sizing.

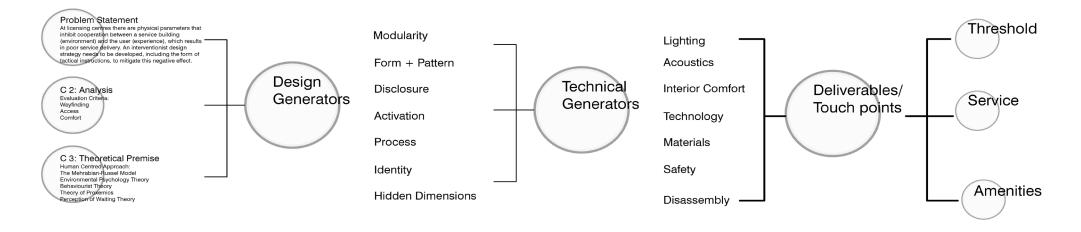


Figure 5.6 An overview of the Design Strategy



Public Office Landscape, Yves Behar and Fuseproject for Herman Miller, 2013

"Collaboration is a key factor to success, and yet office furniture has not evolved to harness the potential of these interactions" Fuseproject (2014)

This is a modular office system designed to encourage collaboration between employees (Dezeen 2013). This system combats the idea of individual pockets for collaboration within an office environment but instead brings collaboration forward in both a focused and casual manner. The furniture system is fluid with seating that flows into desks and hard surfaces that flow into soft surfaces.

Fuseproject (2014) conducted extensive research and was influenced by the three following facts as it stated:

- 1. We need to foster collaboration not just in formal group spaces, but everywhere (70% of workplace collaboration happens at the individual desk).
- 2. Good work environments require a variety of different workspaces in close proximity to workers' desks.
- 3. We need to enable greater flexibility to adapt to changing needs.

Therefore, the design is comprised of three main concepts: social desks for individual work and collaboration; group spaces for group-focused interactions; and casual spaces in-between that allow for informal interaction and the idea of community (Dezeen 2013).

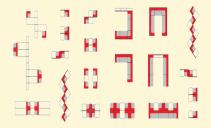
"This system of shared surfaces would be inviting to guests, have no implied hierarchy, and offer collaborative zones spread evenly throughout the floor plan" Yves Behaar (Dezeen 2013).

This system was prototyped and tested by Fuseproject,

as they used the system in their own offices for 18 months (Dezeen 2013).

For the purpose of this project, what will be taken from this precedent is the development of a modular system that allows variety in its set up. The manner in which Yves Behaar looks at collaboration space and converting the usual office environment to a multitude of connection zones will be investigated and applied to the Tshwane Licensing Department as a new type of connection between users is needed whether in waiting or service areas. Lastly, Fuseproject highlighted the need for a flexible approach which will be studied in terms of creating a similar solution.

from a few simple elements,



many varied possibilities.





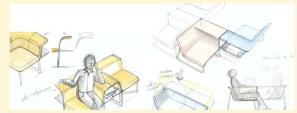








Figure 5.7 Public Office Landscape, Yves Behar and Fuseproject (Dezeen 2013)



5.4.2 Activation:

As discussed in Chapter 3, activation of interior space is the controlling of emotions through environmental elements such as objects, lights and cues.

Colour:

Colour within this design is to be used to differentiate the parts of the whole so that the interior becomes legible. Through implicating certain colours to the specific service areas navigation becomes easier as the user would simply have to follow the colour.

Referring to the colour table developed in Chapter 3 the colour to function assignments was done as follows:

TEST- green. Green is a colour that calms and relieves anxiety. It symbolises growth. Therefore it is the ideal colour to calm nervous test writers.

APPLY- orange. It is the colour of energy, ambition and movement, "best used to stimulate a strong desire for an outcome". Apply is the first step of most processes so orange is an ideal colour.

RENEW- blue. It is the colour of dependability and loyalty. Users that come to renew their licence have been through the rigmarole of visiting the licensing department. It is these users whose perceptions need to be changed to show the reliable nature of results.

VEHICLE- red. It is effective in smaller areas and it is the colour that signifies strength. The vehicle counter represents the shortest process.

COLLECT- yellow. It is the cheerful colour. It represents light and it is the first colour the eye sees. This signifies the end of the process and it should be cheerful.

Material pallet:

"The warmer (defined in terms of hue, brightness, and/or saturation) the colour in a service environment; the more negative the effect and the longer the perception of waiting time duration." (Baker & Cameron 1996)

On a larger scale, the surrounding area of the Licensing department is industrial. There are housing estates with no specific demographic therefore there are no cultural implications to the design.

On a smaller scale, the building has no interesting architectural details or elements. It is built with materials typical to the industrial surrounds such as concrete, brick and corrugated sheet roofing. The materiality offers an interesting vantage point and influences the industrial material pallet of the proposed design. Using and developing the existing material pallet will provide a recognisable connection for the users of the building. The existing material colour pallet is important and therefore materials chosen will work in harmony with the existing structure. The materials provide an industrial feel, therefore a neutral colour base (grey concrete, brown brick etc.) has been selected. This provides a platform for the introduction of the new colours to be contrasted against and therefore read legibly within the interior. Jeanne (in Ding & Guaralda 2013:120) states that when cool colours are combined they have a calming and relaxing effect on the users of the space as well as allow the space to feel larger and less confined. The neutral colours chosen will therefore be cool in order to relax the user and make the interior less constricting. InHouse Brand Architects' design of the 99c offices in Cape Town takes the use of existing materials to an exciting level and this is cited for this reason.



99c Offices, Cape Town, InHouse Brand Architects, 2014

The new office for the advertising agency '99c' focuses a lot on the break-away spaces where most collaboration takes place. It is also about the integration of the different users of the building. In order to obtain optimal efficiency the architects did an intensive study on the activities of the employees and from these established two zones, "high-focus" and "high-communication" (Dezeen 2014). High focus zones are individual zones and high communication zones are collaborative zones, with collaborative spaces breaking the mould of the conventional conference room.

The connectivity within this space was of utmost importance and for this reason Inhouse Brand cut a hole in the existing slab that separates two floors to create a connection between users (Dezeen 2014). This made room for a new stairwell. The interior layout provides for specific linked spaces to be placed at opposite ends so as to encourage movement through the space.

What is exciting about this design is its very honest material pallet and extensive volume. Pine and plywood are used for new elements that have been added and texture and warmth is added with oriented strand board (Dezeen 2014), whereas the existing building shell is kept raw with materials such as concrete, glass and steel. Selective bursts of colour are added throughout the interior through furniture and spatial demarcation (Dezeen 2014). Certain collaboration areas are raised on platforms, which is possible due to the double volume areas. This volume even allows for trees in this space (Dezeen 2014). This precedent shows the exciting possibilities with a simple material and colour pallet. It also shows interior intervention on a slightly smaller scale as the interior is made up of zones that work together and are placed in a large open building shell.

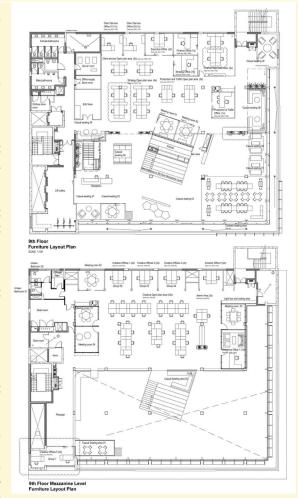














Figure 5.8 99c Plans and Interior Shots (Dezeen 2014)



Lighting:

"Given a base level of lighting adequate for the task to be performed in the service environment. the higher the levels of lighting above this base level, the more negative the effect and the longer the perception of waiting time duration." (Baker & Cameron 1996)

This is an excerpt from Table 3.1: Summarised Findings of the Model from Baker-Cameron (1996), in which the effect of lighting on waiting time is highlighted. The strategy for lighting is both qualitative and quantitative. Lighting can influence both physical and emotional functionality and therefore it serves more than just a visual requirement.

The strategy is to obtain the base level of lighting needed but through reacting to different environmental loads in the process. This reaction will have an effect on both the physical and emotional qualities needed. Here is a brief description of the environmental loads that are referred to:

High Load Areas:

Environments that are complex. crowded. asymmetrical, novel, unfamiliar, surprising or random (Gordon 2003:12)

Low Load areas:

Environments that are simple, uncrowded, symmetrical, conventional, familiar, unsurprising or organized (Gordon 2003:12).

In general, people tend to feel more alert and energetic on sunny days and this is due to the bright highlights and crisp shadows formed by sunlight (Gordon 2003:11). Therefore, emulating this contrast in certain areas could elicit that same feeling within the interior. This approach, however, cannot be applied throughout the Centurion Licensing Department as there are areas within the interior that would be impacted negatively by this approach.

The next step is to classify high load and low load areas within the interior of the Licensing Department: this is done through identifying the tasks that need to be performed. If the task that needs be completed is already complex in nature (i.e. preparing for a test) the load is great enough that users will be highly stimulated, so adding any additional loads will be overstimulation (Gordon 2003:12). When tasks are simple or routine, a higher load is needed to reach optimal performance (Gordon 2003:12). Table 5.1 Tabulates the Areas. Tasks and Loads

These high load and low load areas can be created through varying the degrees of brightness according to the load and task. This is done in the following process:

- Identify the activity that will occur
- Determine the degree of stimulation needed
- Determine the degree of brightness contrast (developing patterns of light and shade by choosing specific surfaces and objects to receive light/dark) (Gordon 2003:12).

Through allowing contrast it will create these different lighting areas within the building. Low contrast areas are used where low stimulation is needed. This is achieved through a large portion being diffuse light with a small amount of focused light (Gordon 2003:12). High contrast areas are used when high stimulation is needed. This is achieved through a small amount of diffused light and a large amount of focused light (Gordon 2003:13). These areas create patterns of light and shade that focuses attention, which is useful for guiding users when in an unfamiliar room or event (Gordon 2003:13).

Depending on which site is being used this lighting strategy should be applicable through incorporating

both natural and artificial light sources to optimise on energy being used. This will be investigated in the next

energy being used. This will be investigated in the next part.

Objects and Cues:

Wayfinding and lighting will act together and become cues to assist orientation, movement and circulation throughout the building. The circulation areas are clearly distinguished from the pause and service areas through these cues as the lighting will denote a different sense of movement that occurs there. different sense of movement that occurs there.

Temperature:

"The greater a temperature's distance beyond the range of comfort in a service environment, the more negative the effect and the longer the perception of waiting time duration." (Baker & Cameron 1996)

Temperature and thermal comfort plays an important role in the comfort of the users. This is highlighted from an excerpt in terms of temperature from Table 3.1: Summarised Findings of the Model from Baker-Cameron (1996). Therefore, the approach to temperature is simple; the level of optimal comfort will need to be investigated and achievable through sustainable methods.



Table 5.1 Areas, Tasks and Loads

Ta al.	11	
lask	Load	
Walking, Crossing the	LOW LOAD	
threshold		
Signing in, working on	HIGH LOAD	
computer, routine work		
Working on computer, doing	HIGH LOAD	
eye tests		
Writing test on touch screens	LOW LOAD	
Own activities	HIGH LOAD	
Studying for test	LOW LOAD	
	LOW LOAD	
Ordering and receiving	HIGH LOAD	
refreshments		
Wayfinding, orientation,	HIGH LOAD	
walking		
	threshold Signing in, working on computer, routine work Working on computer, doing eye tests Writing test on touch screens Own activities Studying for test Ordering and receiving refreshments Wayfinding, orientation,	

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5.4.3 Disclosure:

Transparency:

Within this interior a sense of transparency is important for spatial orientation and a sense of movement. Transparency provides a sense of connection. People have an inherent interest in activity that is happening around them (Rengel 2007:235). Transparency allows for visual connections to the exterior which provides interest and information (time of day, weather conditions) as well as a sense of relief (Rengel 2007:236).

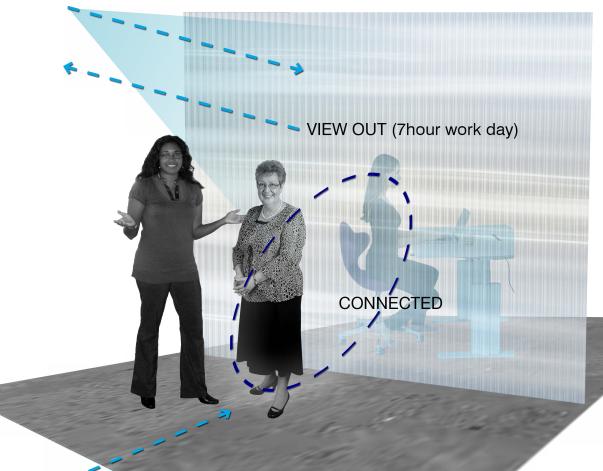
Transparency can be taken further to highlight the service being provided, whether in a broader sense such as corruption or more literally such as preventing employees from disappearing behind a door while assisting a user, which leads to frustration and confusion.

Polycarbonate is used for new partitioning walls due to its transparent quality. It divides the public and the private areas but still provides a connection as both sides can sense movement on the other side. This connection is important, as it invites the outsider (public) in and gives the insider (employed staff) a view out to control the environment.

By applying polycarbonate to the Centurion Licensing Department, the transparency will allow natural light to filter into the private section. The back of the building has no windows for safety reasons so it will also give the employed users working in the private section a view outside of the office area that will provide relief.



NATURAL LIGHT IN



Layout:

"Spatial layout in a service environment that is designed to minimize attributions of delay to the organization will be associated with more positive effect and lower perception of waiting time duration than will spatial layout that encourages attribution of delay to the organization." (Baker & Cameron 1996)

The space planning is approached in a manner that allows the visiting user a clear view of the interior in terms of their past stop in the process. Through

The space planning is approached in a manner that allows the visiting user a clear view of the interior in terms of their next step in the process. Through understanding the interior the user will be at ease while they wait for their turn as they will have the comfort of knowing they are in the right place.

The space planning also revolves around the intersection and not the path. Through disclosure the user will be able to define landmarks within the interior that will assist in orientation. These landmarks have been placed so the user will always be able to find one within their field of vision, this is done to provide comfort and not strain the user's vision.

Waiting areas are placed on platforms to provide an elevated view of the interior.



Table 5.2 Pallet vs Wooden Joist vs Access Flooring

	Wooden Pallets	Wooden Joists	Access Flooring	
Flexibility	Can be moved to a	Once cut into	Modular system that	
	different area	dimension they can	can be refigured	
	according to pallets	only fit that formation.	according to its 600 x	
	size.		600mm grid.	
Sustainability	Using reclaimed	If reclaimed timber	New System, not	
	pallets.	joists can be used.	using existing	
			materials	
Universal Application	Pallets reclaimed from	Joists used will only fit	This can be applied to	
	different areas will	areas will the specified area any of the building		
	differ in size as pallets	designed for.	this project. Access	
	from different		flooring works on a	
	countries vary in size.		600x600mm grid	
	(Waltloo type industry		which fits the universal	
	vs. Centurion type		project grid of 1200	
	Industry)		x1200mm	

5.4.4 Form and Pattern:

As investigated in Chapter 3 people are comfortable deciphering the patterns that their environment provides. A quotation below taken from Chapter 3 reiterates this:

"Humans have a remarkable facility to process information and that information and affect are in a close adaptive relationship with each other... people are more likely to be reasonable and cooperative in environments that support their informational needs" (Kaplan and Kaplan in De Young 2013).

Applying new forms and patterns in a language that users understand could denote this cooperation that is mentioned by Stephen and Rachel Kaplan. The Licensing Department proposed design provides this in terms of the traffic and road visual language.

As mentioned before the grid was interpreted from the grid found on road maps for orientation and quick access to information. Signage shapes are investigated in terms of their value for wayfinding.

The pedestrian crossing is an important element as it is meant to portray user foot flow but as a guide and not a path. Kaplan and Kaplan's view quoted at the beginning of this section informs the notion that patterns are to be discovered and deciphered not included as a literal representation. Therefore, the design evolved from the pedestrian crossing being used quite literally to it changing shape and form. Carlos Cruz-Diez did an intervention in urban space where he too challenged the pedestrian crossing.



Color Aditivo, Carlos Cruz-Diez, Panama City,

This is an urban intervention on six crosswalks for the Festival Abierto 2013. This is just a visual precedent as it allowed thought to delve beyond just the original form of the pedestrian crossing.







Figure 5.11 Color Aditivo, Carlos Cruz-Diez (Cruz-Diez 2013)

When investigating the new identity the importance of the intersection was introduced. It stems from the physical occurrence that happens on the road. It deals with the rules of the road that people should be reminded of in terms of the function of the building. It's about right of way and that everyone will get a fair chance to have a turn. The typical cross of the four way intersection is overlaid into pattern and form within the design.

In this project, application of the Gestalt theory happens in more than just form and pattern. Form inspired by the visual traffic language will be grouped to denote the grouping of services; this will be reiterated through the following:

Grouping of Colour:

This is important for wayfinding and classification of services. Grouping of colour allows a code to be formed alongside the other wayfinding information. This allows a universal approach to the deciphering of wayfinding information. Neutral colours will also be grouped to convey certain messages.

Grouping of Seats:

As per the proxemic theory, which will be discussed later in this chapter, the grouping of certain seats will portray different activities that happen there. The need for this is to develop certain quieter zones where users coming in for tests can study. Other layouts include areas that can be used for working (power points for electronic devices), for socialising and for enjoying refreshments. The challenge lies in designing the seating pattern to be read and interpreted in this way.

Grouping of Services:

The grouping of services allows for processes to become easy to follow and manage. Certain services are provided in distinct parts of the building and therefore it becomes easier for the user to navigate. The building layout is open plan to allow for disclosure, however, a solution is needed to classify these specific service spaces. Studio O+A achieved this in an open plan building in the Yelp Headquarters.

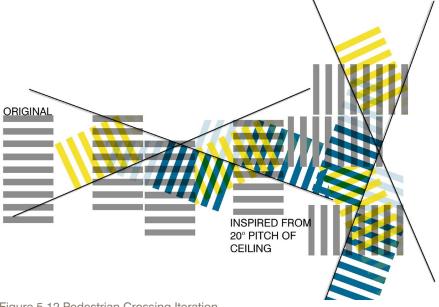


Figure 5.12 Pedestrian Crossing Iteration



Yelp Headquarters, Studio O+A, San Francisco, 2014

Yelp is an online city guide and directory company that moved its headquarters to a high rise building in San Francisco. The company occupied 12 of the floors but needed a solution that connected the offices. Studio O+A developed the solution to create areas on each floor such as break rooms and coffee bars that are accessible to all employees on all the floors, therefore making users move all through the building (Dezeen 2014). They also cleared all the office space through knocking out existing partitions and doors creating a warehouse-style interior finished with exposed brick walls and concrete ceilings (Dezeen 2014).

What is noted from this precedent is that in the open plan space they have used partitions and boxes to allow some of the open spaces some privacy. These partitions also allow for classification of spaces within an open plan. Therefore, there is disclosure but also a sense of personal and classified space.











Figure 5.13 Yelp! Interior Shots (Dezeen 2014)



5.4.5 Hidden Dimensions

Universal:

The Centurion Licensing Department building is only 14 years old but it was not built to comply with universal accessibility standards. In order to make this process comfortable for all users this building will need to be adapted accordingly.

All elements within the building need to be accessible to all, therefore a tool has been created to rate the universal accessibility of service building. This allows for iteration of all design elements in order to comply with universal accessibility guidelines.

Acoustics:

Acoustics is considered a new dimension as through the analysis done it is evident that it wasn't considered when the building was built. As with lighting, acoustics need to differ throughout the interior and mainly function on the task that is being done in the specific area.. The design strategy will be to create different acoustic zones for the following activities:

In the test room, there should be an acoustic barrier that does not allow sound from the waiting areas to inconvenience the users doing the test.

In the service booths acoustics need to be at a level where a conversation can be had and not heard by other users. Both the service provider and public user should be able to hear each other without any difficulty.

In the waiting areas the general acoustics should keep the conversation levels at a comfortable level in order to either enjoy a conversation with another user or to sit in solitude.

An acoustic barrier also needs to be formed between the public parts of the building and the private parts so that the staff working in the private section are not disturbed.

It is simpler defining acoustic discomfort than it is defining acoustic comfort. This however just allows the equation to works backwards, if we can measure what is wrong it will highlight what is right. This will be approach used in order to gain an acoustically comfortable level within the Centurion Licensing Department.

Acoustic discomfort for human beings is defined as any type of noise, both continuous and brief that is connected with a high sound level (Hausladen and Tichelmann 2010:39). However this does not mean trying to cancel out every unnecessary sound as human beings are constantly surrounded with background noise which makes common sounds within an interior important as it is used as an orientation tool. Common sounds are important in terms of wayfinding. It is when the room or building exposes user to a higher level than a comfortable background noise that discomfort happens.

Acoustic comfort is greatly dependent on the use of the room and for this reason sound pressure levels have been waited against activities that take place in certain rooms (Hausladen and Tichelmann 2010:39). Even though the Interior of the Centurion Licensing Department is open plan, this can be reflected in the acoustic zoning diagram as the interior has been divided up into different activity zones. The zones are not only defined by activity but are designed according to the types of waiting and user personalities that can be found within this service building.



Proxemics:

Proxemics, as studied in Chapter 3, highlighted that there are 'hidden dimensions' within interior spaces. Hidden dimensions referred to in Chapter 3 have been integrated and tested alongside metric data (Metric Handbook) and this has become a yard stick in designing the service office areas and waiting spaces.

In chapter three it is noted that this theory is outdated, very specific to certain cultures and that the data is very vague in terms of the South African demographic however some of the notation that Hall uses to measure proxemics can be still be adapted and used in terms of designing for user comfort within a South African Public Service Building. These notations are noted when designing for where interaction needs to take place. Acoustics will eliminate the need to shout at service booths therefore changing the tension between service provider and public. The design of service booths will allow for eye contact. Thermal exchange will be avoided through materials that do not retain heat long (seating and counters), therefore when users use furniture they will not feel heat from a previous user. Waiting areas will allow for both Socio-petal and Socio-fugal areas depending on what the user prefers.

Proxemic 'yard sticks' are developed for both office areas and waiting areas. See figure 5.14 and 5.15.

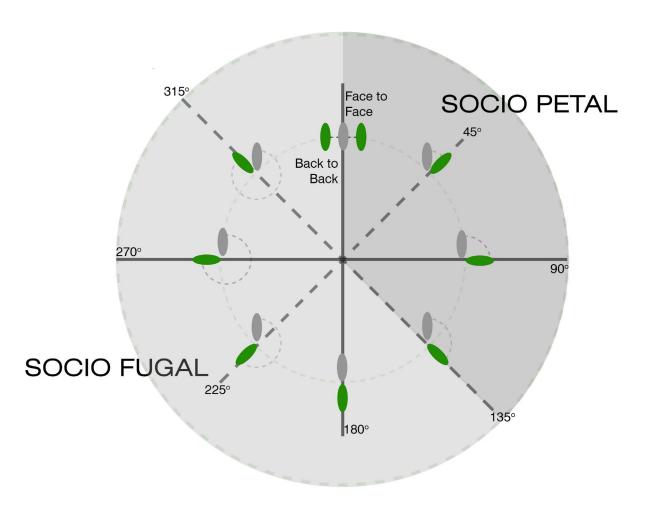


Figure 5.14 Sociofugal/Sociopetal Axis Yard Stick



Ergonomics:

"The higher the level of discomfort of furnishings in a service environment, the more negative the effect and the longer the perception of waiting time duration." (Baker & Cameron 1996)

Ergonomics is an important new dimension as it wasn't properly considered when building furniture in the building from the start. The service desks currently are very uncomfortable to work at and therefore a new design is needed to provide comfort to the employed staff. Investigations have been done on the existing service desk in order to improve the comfort of the user through their seven hour shift. Ergonomics will also be reflected in the waiting areas in order to counteract the perception of waiting time as stated by Baker and Cameron (1996).

Waiting personalities:

"Positively valenced, moderately distracting furnishings in a service environment will result in more positive effect and a lower perception of waiting time duration." (Baker & Cameron 1996)

In Chapter 2, types of waiting were defined according to user personalities. There are certain spatial elements that provide comfort for these types of personalities. In order to create a comfortable space for all types of personalities to be accommodated, these elements need to become design guidelines. These elements tie in with the proxemics information and seat grouping discussed previously.

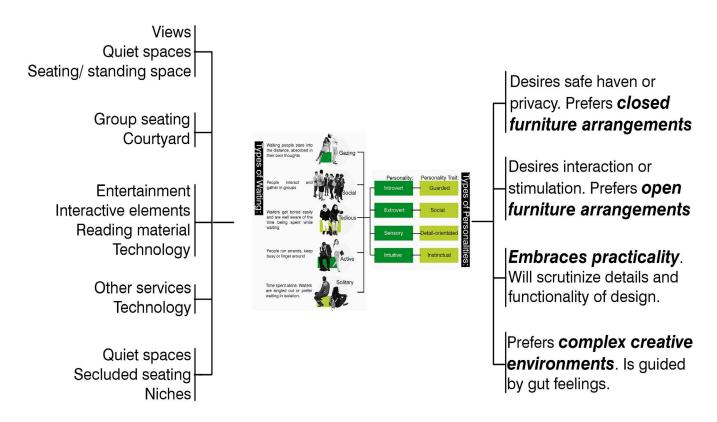
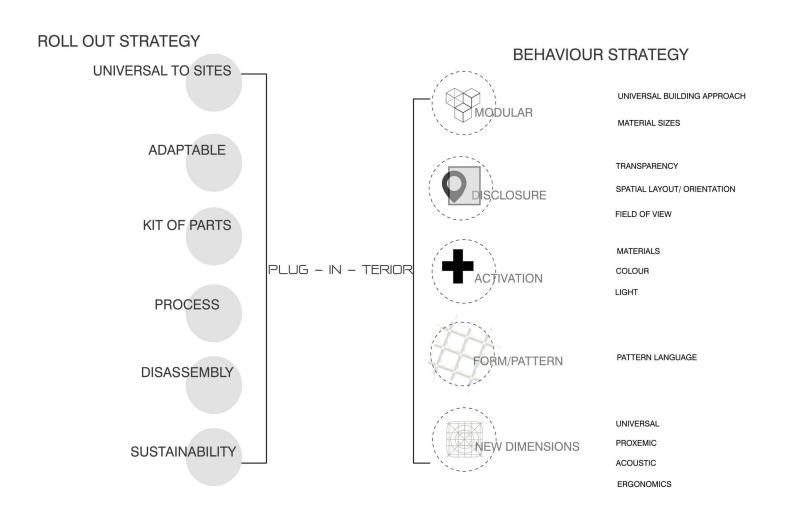


Figure 5.16 Types of waiting areas (adapted from Kopec 2012 and van der Westhuizen 2010)

S.S TECHNICAL STRATEGY



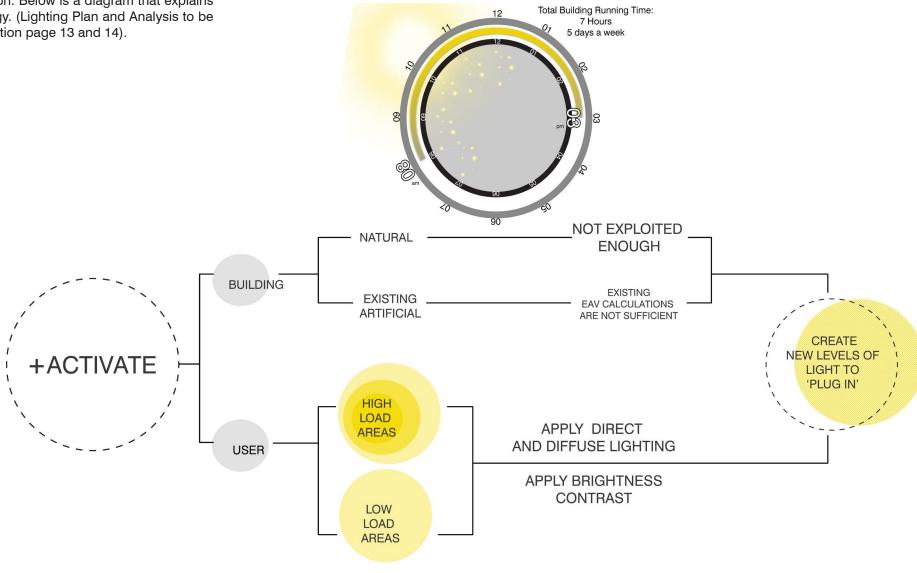
The technical strategy is derived from both the design and roll-out strategy. Therefore details are inspired to be adaptable and easy to assemble as well as to conform to design guidelines set out in the previous section.





5.5.1 Light:

The lighting approach is derived from the design guideline, Activation. Below is a diagram that explains the lighting strategy. (Lighting Plan and Analysis to be found on presentation page 13 and 14).



DEFINE THE LOAD AREAS WITHIN THE BUILDING

Figure 5.18 Lighting Strategy



5.5.2 Acoustics:

The reverberation time is the most important variable when describing acoustic character as it specifies the duration of an echo and is influenced by the volume of the room, the nature of the quality of sound absorption in chosen materials as well as the occupants in the room (Hausladen and Tichelmann 2010:39). LEED credit the design of acoustic spaces that promote occupants well-being and a comfort and have a set minimum reverberation time that should be met for an effective acoustic design. These have been listed in term of the interior acoustical zones within the interior. Table 5.3 lists the reverberation times that will need to be met through design and materiality (LEED 2013: 73).

As mentioned before the approach is to works backwards from discomfort to comfort. The method used will be to reduce the reverberation time within the interior by specifying sound absorbing materials and by arranging spaces to dampen rather than magnify sound reverberation. This will be done through calculating the Reverberation time of the building as an empty shell (after stripping back and before new work) and then to iterate the calculation as material choices are added until a comfortable reverberation time is met. This is done using the Sabine Formula. Table 5.4 are the absorption coefficients and NRC of New Materials used within Interior (full absorption is 1 whilst full reflection is 0). (Ceiling Plan and Acoustic Analysis to be found on presentation page 13 and 14)

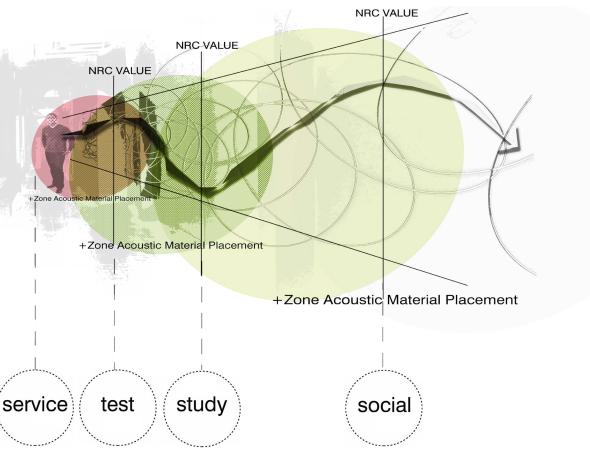


Figure 5.19 Acoustics Strategy



Table 5.3 Reverberation times that will need to be met (LEED 2013: 73).

Acoustic Zone	Reverberation Time (T60)
SERVICE - Service Booths	< 0.8
- Reception Area	< 0.8
TEST - Test Room	< 0.6
STUDY/ SOLITUDE - Waiting Areas	< 0.6
SOCIAL - Waiting Areas	< 0.8
- Café Area	< 0.8
Private Office Area	< 0.6

Table 5.4 The absorption coefficients and NRC of New Materials

Material	250 Hz	500 Hz	1 kHz	2 kHz	NRC
Vinyl PUR Floor Surface	0.20	0.40	0.50	0.60	0.50
Valchromat Frame	0.68	0.00	0.00	0.40	0.74
Structure and Seating		0.87	0.98	0.42	0.74
Wool Fibre	0.78	78 0.88 0.96	0.00	0.00	0.60
Upholstery			0.93	0.60	
Acoustic Panelling	0.26	0.55	0.04	0.89	0.76
(Mitesco)		0.55	0.84	0.69	0.76
Polycarbonate Partition	0.28	0.44	0.50	0.78	0.56
Wall 40mm		0.44	0.50	0.76	0.56
Occupants (per 1/10	0.35	0.42	0.46	0.5	0.44
person)		0.42	0.40	0.5	0.44



5.4.3 Electrical:

As a Universal approach to buildings is needed the interior components run independently from the existing building and doesn't have to conform to the current electrical structure. Only one connection to the buildings electrical supply is needed. (Plan to be found on presentation page 13 and 14)

5.4.4 Materials:

Materials chosen need to fulfil both the rollout and the behaviour strategies Materials chosen need to provide the user comfort and make them feel welcome. Materials used need to provide user with a certain sense of luxury but without thinking that their 'tax money' is being wasted unnecessary splurges.

Due to the nature of the service provider, materials also need to provide for the heavy foot traffic that the building has. Materials need to withstand these elements and be as robust and maintenance free as possible in order to sustain the feeling of efficiency. As soon as the interior elements start looking dirty and unmaintained the general feel of efficiency will decline to.

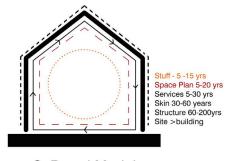
In terms of lifespan Materials need to relate back to the host building. In the case of Tshwane licencing department there it shows that in a short timespan a building can become irrelevant. This building is only 14 years old but due to the rapid exponential change in technology it has allowed the building to become barely functional.

S. Brands 6's diagram was studied and it brought light that this similar sort of process can be implemented but on a much smaller scale. Using the same thought process, that each element has a date, the interior system can be placed on a timeframe and this can indicate the maintenance and up keep of the interior. What this proposes is that the lifespan of the interior system is flexible. Therefore a system where surfaces

can change and be replaced is needed.

Designed elements are therefore made up of a frame and replaceable surfaces. Surfaces that are used by many users and need to be of a softer material in order to be comfortable are surfaces that will be replaced after a certain time. The rigid frame will stay in place and a new surface will just be added.

Materials lifespan also need to relate back to the host building as well as technological advances. "There has been more technological improvement in the last 50 years than in the previous 5, 000," asserts Patrick Cox, co-editor of Technology Profits Confidential (Bowman 2010). In the case of Tshwane licensing department there it shows that in a short timespan a building can become irrelevant. This building is only 14 years old but due to the rapid exponential change in technology it has allowed the building to become barely functional. For this reason the design proposal should have a measured lifecycle. Therefore Materials used need to be recyclable or biodegradable. (Material Section and Analysis to be found on presentation page 15 and 16)



S. Brand Model



Plug In-terior Model



5.4.5 Safety:

The design proposal needs to 'plug in' to existing buildings safety protocols. In terms of the Centurion Licensing Department these are not very clear and therefore a fire safety strategy is needed.

For Occupation G1 the building has been divided into four zones according to SANS Part T (4.4). The Roll out strategy can't provide a fixed automatic fire extinguishment installation and therefore the building is divided up into floor areas of not more than 5000m². Escape routes are allocated to each of these zones. Circulation and waiting areas were designed around the minimum requirement as stated in Part S. The floor plan allows clear pathways to each Emergency exit.

The Cable tray is located to be the central spine of the building. Emergency signage is mounted on the cable tray as important information should be placed perpendicular to user movement. The lighting suspended from the cable tray is also connected to an power source independent of the mains supply. Materials are chosen to comply with SANS in terms of their structural stability. (Escape Route Plan to be found on presentation page 15 and 16)

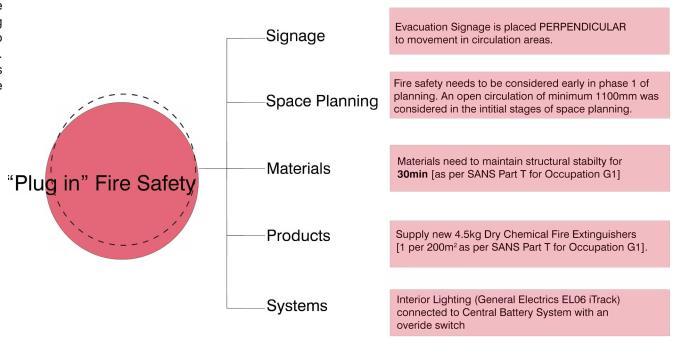


Figure 5.21 Safety Strategy



The rest of Chapter 5 consists of the Design and Technical Presentation.

This will be available in Digital Format.

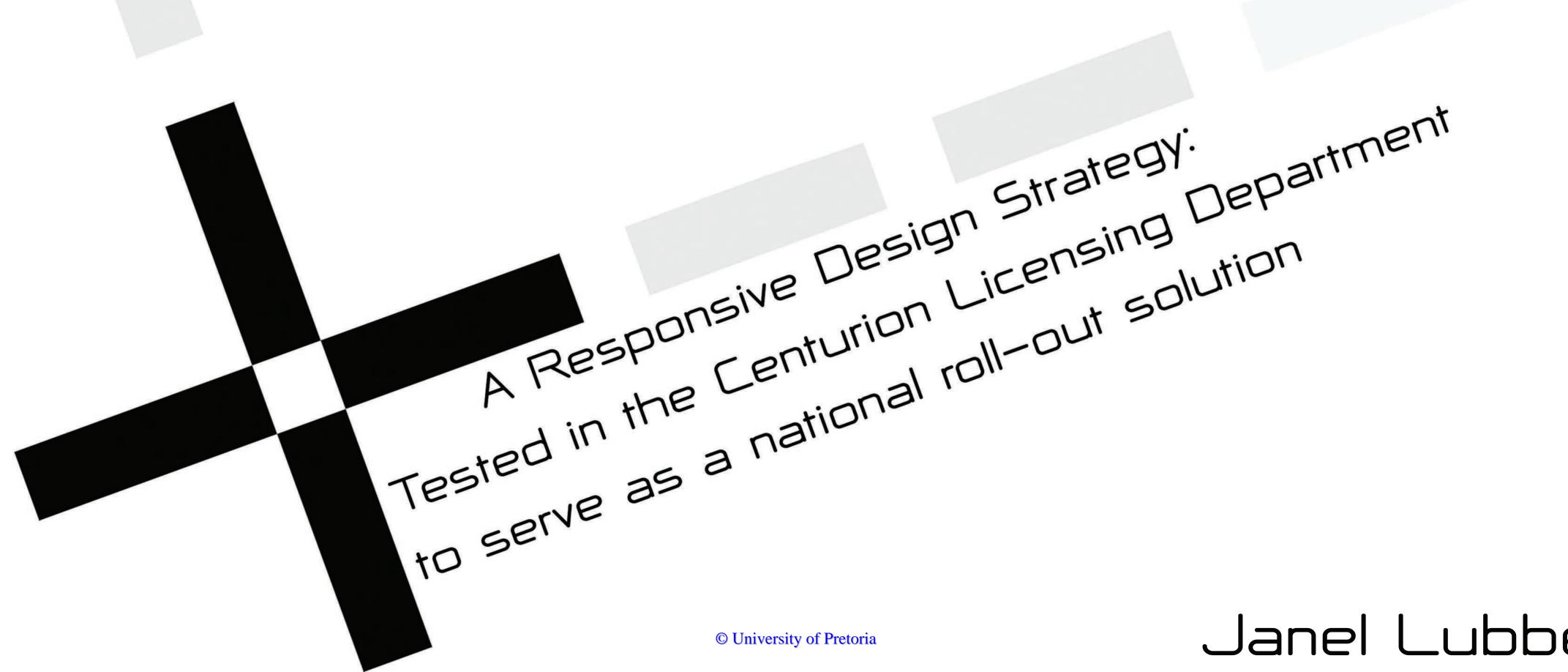




This chapter and presentation defines the systems and designed elements that allow the building to become a source of information. The deliverables that were set out at the start need a system that is adaptable which can be implemented in a very short space of time as well as a system that can be used to change user perception of space and service. The design and technical aspects work hand in hand to realise this. New processes and designing for disclosure allow the building to be read and navigated with a lot more ease. Lighting and materiality activate the space and are focused on changing user perception but also on being easily sourced and assembled. New dimensions highlight important aspects that are often overlooked in these service buildings. All the design and roll out strategies contribute in order to achieve a cooperative interior.







Janel Lubbe



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Figure 5.27 The Touch Point Map Explanation

Figure 5.24 Tshwane Licensing Department Site

Phase 1: Planning

Interior design is not only the design of spaces but it is the study of human activity, interaction, movement and spatial governance. This results in the user being both emotionally and physically involved in the interior and by emphasising these factors the interior can be shaped to best

If one considers the behaviour of the user as a physical parameter within an interior condition it should have an effect on the way the user performs in and perceives the interior. Therefore, viewing these elements as design parameters within an interior condition could set up a working equation. If behaviour is viewed as a physical design parameter, it follows that changes in performance will result in altered perceptions, and vice versa. There is a large body of research focused on the relationship between the environment and behaviour, however, none of this information is summarised into a form that can be accessed by designers or that can be used in a design process (Deasy 1985:9). Without an understanding of this relationship the effect of behaviour within an interior space could lead from disorganised to disastrous situations (Deasy 1985:9). As Vimolsiddhi Horayangkura (2012:39) advocates "We must invest our full efforts into putting cutting-edge environment-behaviour knowledge at the forefront of architectural design."

When an environment allows cooperation (whether through interior space, with people and/or their attitudes or simplicity of general performance) then it allows users to function and complete their tasks with greater ease and alleviates friction and conflict. User perception and experience within an interior space will influence how they react within that space.

When an interior is uncooperative - an interior space that is not functioning to its full potential in terms of spatial quality, circulation, programme, and ambient quality - the likelihood of the user becoming frustrated, irritated and angry is much higher. This could lead to a negative social interaction with staff and fellow users in that interior, in turn affecting the overall image of the service provided in that building and thus tainting future users' experiences.

Interior design therefore enables cooperation between building and user. However, when this matter of cooperation is overlooked the negative effect impacts the service that the building provides, leading to a negative user perception. User perception and behaviour is currently not viewed as a primary physical parameter within an interior condition, however, it has a big role to play in terms of how public service buildings function. The interior spaces within the current South African public service domain fall victim to this uncooperative relationship between building and user. As is evident in the level of service delivery in South Africa there is a lack of communication between the public and the service provider, which is mirrored through the fact that there is no sharing of information between building and user, leading to confusion.

The Real world Problem

Public service buildings themselves oppose this vision that the Batho Pele principles consign to the service departments. These buildings fulfil a mono-functional need and due to the lack of connections with their immediate environment and user, they are prone to spatial failures and introspective interiors (Saker 2010:12). These building must meet specified safety standards, but these standards are often implemented at the cost of a welcoming interior and entrance. This in turn creates a non-existent street connection, which to the user is read as a strong, albeit unintended, message of exclusion (Bonta in Saker 2010:14). Existing buildings should more than often be used, as it is not sustainable or feasible to build new buildings within existing urban areas, but often not enough thought or effort is given to the adaptive re-use of the building. These are all factors that contribute to the physical uncooperative nature of the building.

There are too many uncooperative governmental interiors within our country, whether it is due to incorrect adaptive re-use, funding or merely lack of interest. Through improving the state of these interiors we could elicit a positive response from a user, the service given might improve and the resultant image of service delivery may become more positive.

This study relates to South African public service domain and therefore a site is required that falls within this category. The City of Tshwane Municipality: Tshwane Licensing Department was selected as the client for this study

which results in poor service delivery. An interventionist design strategy needs to be developed, including the form of tactical instructions, to mitigate this negative effect.

Through defining the physical parameters that inhibit cooperation between service building (environment) and user (experience) a responsive design strategy will be developed and tested in the Centurion Licensing department to serve as a national roll-out solution.

1. What are the physical parameters that cause an uncooperative relationship between user and building? (How can behaviour be developed into

a physical design parameter?) 2. What is an appropriate tool to assess the existing service delivery condition?

3. Can the building become a physical information system within the service environment? 4. How can design thinking be used to improve systemic problems?

5. Which strategic design interventions will improve service delivery?

The design intention is unconventional in the sense that it will not rely on the site but will be an installation within it. Brooker and Stone (2004) have defined installation as the following: "Installation heightens the awareness of an existing building and successfully combines the new and old without compromising or interfering with each other. Installation can be used to make a short sharp shocking statement in the form of a powerful comment." An installation is needed due to the temporal nature of the department buildings and the fact that they cannot close for long periods of time to allow for drastic/interventionist construction to take place.

This design strategy will challenge the boundaries of interior design as it delves into other disciplines such as information design and service design. Accessing the information at these disciplinary crossroads will only strengthen the discipline and prove it to be more than a visually The design installation needs to positively influence the behaviour in the perception/performance equation and through that increase the overall

user experience within the service interior.

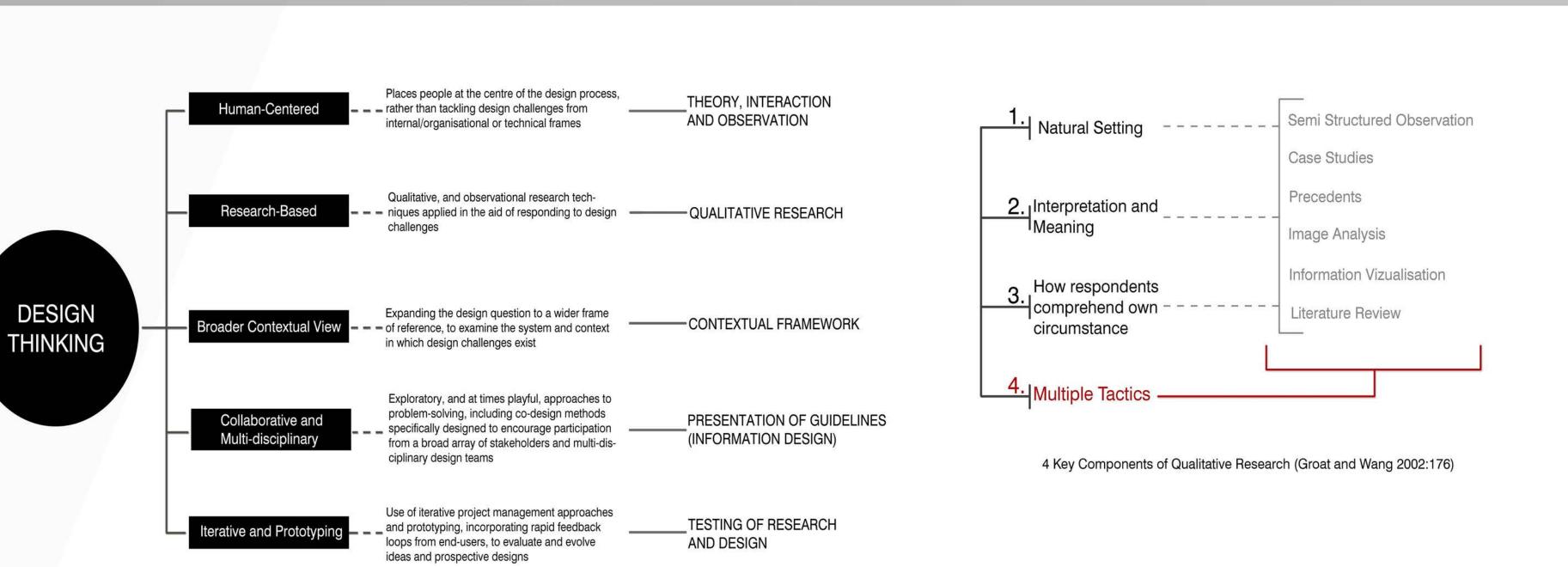
OBJECTIVES OF DELIVERABLES:

Through understanding the physical parameters that inhibit cooperation between building and user a design strategy for the interior will be

The design strategy aims to firstly devise interior systems and layouts to change the way the service building is currently being used. Through devising these interior systems and layouts it will allow the building to become a physical service provider. It will be a bearer of information allowing ease of use and efficiency, accessibility, identity, and auxiliary services.

Creating alternative the way in which waiting and receiving service occurs and therefore improving the amount of time that the service takes.

Through developing the necessary guidelines for the interior of the Tshwane Licensing Department as the pilot site, these guidelines will be able to be applied to further public service buildings.



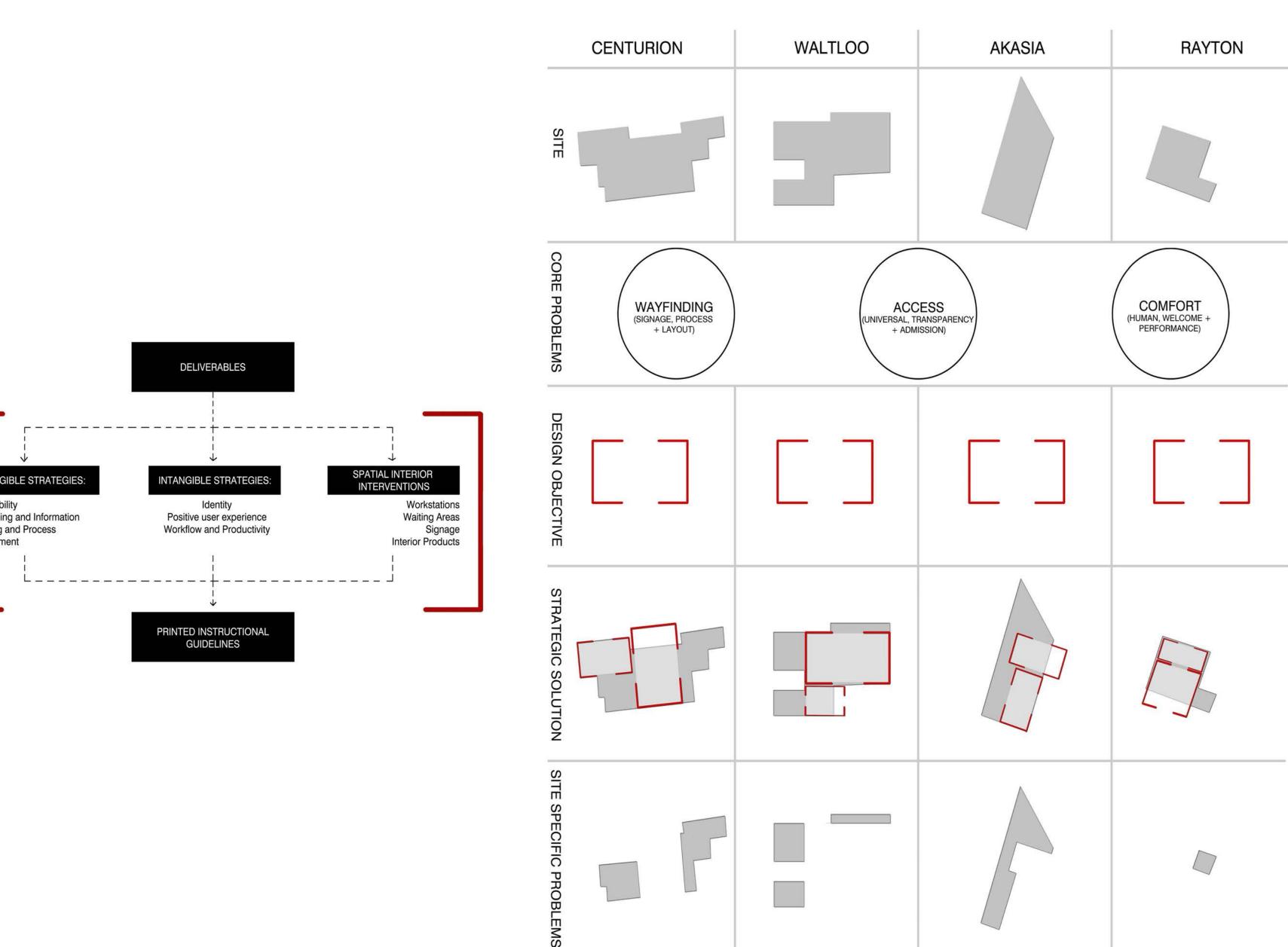
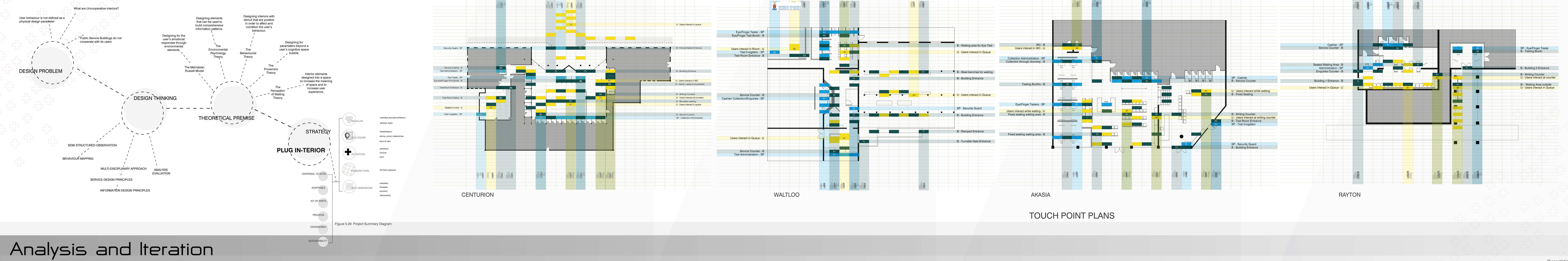




Figure 5.22 Design Thinking Methodology

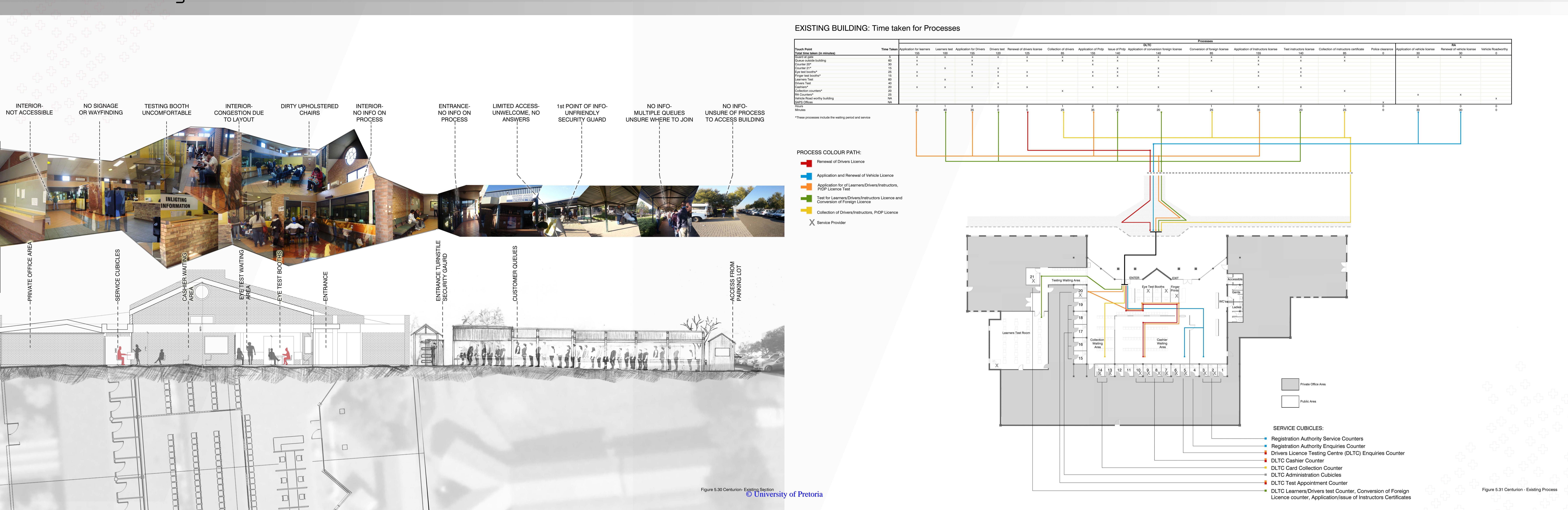


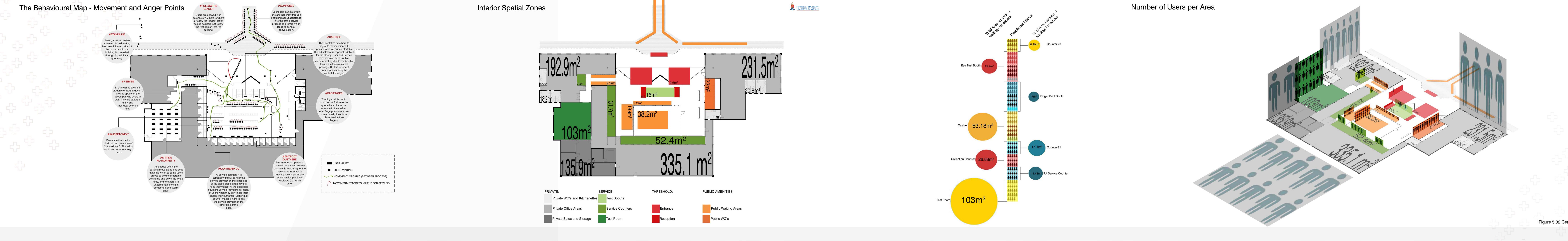






Phase 1: Planning





Analysis and Iteration

Presentation Page

Phase 2: Approach to Building

Approach to Buildings:

All four sites are different in terms of construction however a material analysis shows that there are a few similarities between the interiors. As stated in Chapter 4 a universal approach is needed for the Tshwane Licensing Department Buildings. The approach adapted from Fred Scott's (2008), on Altering Architecture, is showed in the following four steps: stripping back, making good, enabling works and new works. This approach deals with how to make them all appear similar as well as with maintaining the existing buildings.

Maintaining not demolishing (Design for Disassembly)

"The greenest building is the one already built"- Carl Elefante, AIA (Chiodo 2005)

An underlying intention of this project is to use existing buildings rather than to build new ones. The design intervention is aimed in such a way so that existing buildings can be maintained and re-used without expensive retrofits. The existing building is valuable in terms of its embodied energy. Therefore even if Service Departments find that they need to move, the design intervention should allow for this and be adaptable to another existing building. When areas start developing, existing buildings often become redundant which leads to their demolition. This redundancy is also brought about due to the change in the buildings function.

Stewart Brand (in Guy and Ciarimboli 2005:25) has defined six categories into which a building can be divided namely: Site; Structure; Skin; Services; Space plan and stuff. These layers all have different life cycles. These layers are also always in constant friction due to changes such as building function and design interventions as one layer dictates the next (Guy and Ciarimboli 2005:25).

The intention with this investigation is to mitigate the tension between these layers so as to show the value in using an existing building. Due to changes with systems, processes and technology, branding and use, buildings always need to change in order to keep up with what the user needs. Therefore a degree of flexibility is needed. What this flexibility allows is:

Adaptation to new spatial layouts

Adaptation to new technological systems
Adaptation to allow moving from one existing building to the next

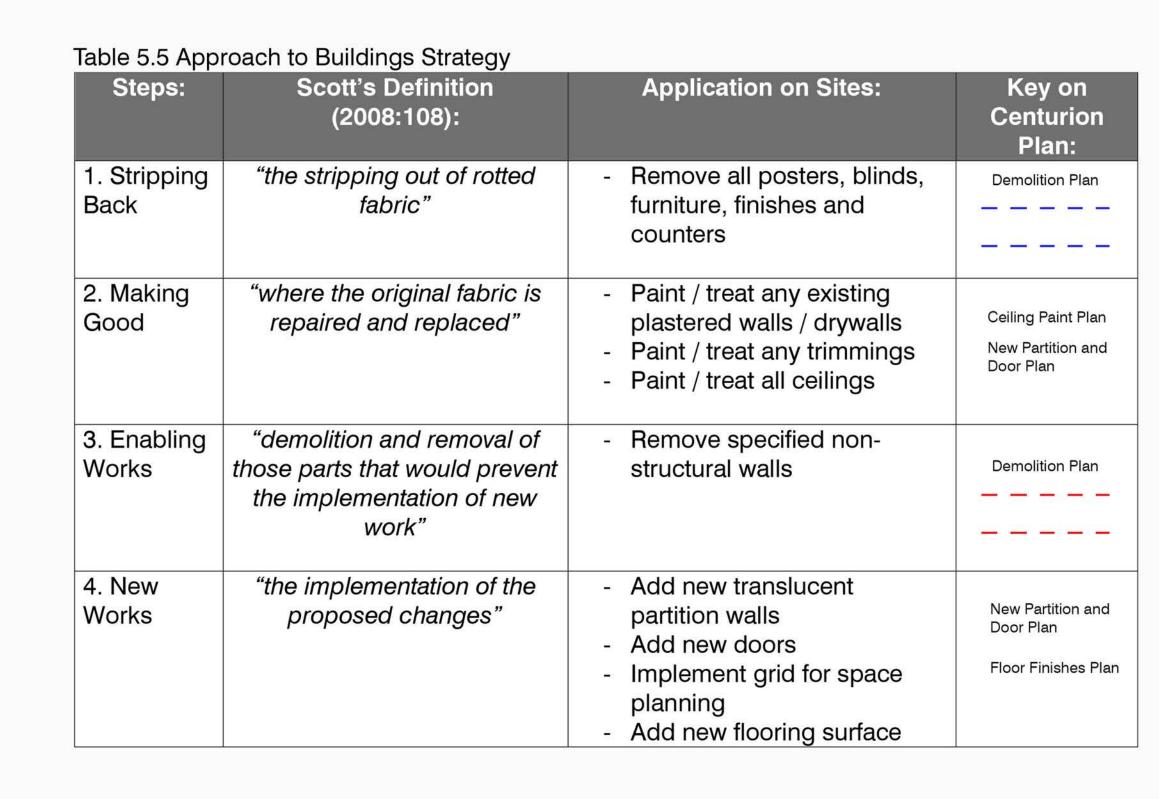
Designing for Disassembly will allow for this kind of flexibility within the interior intervention proposed. Designing for Disassembly has three important factors to consider:

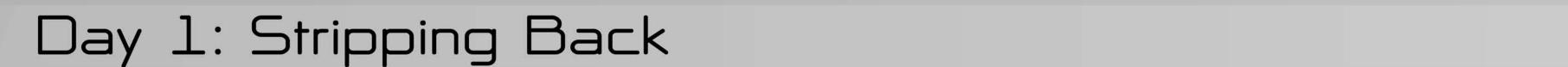
- The selection and use of materials

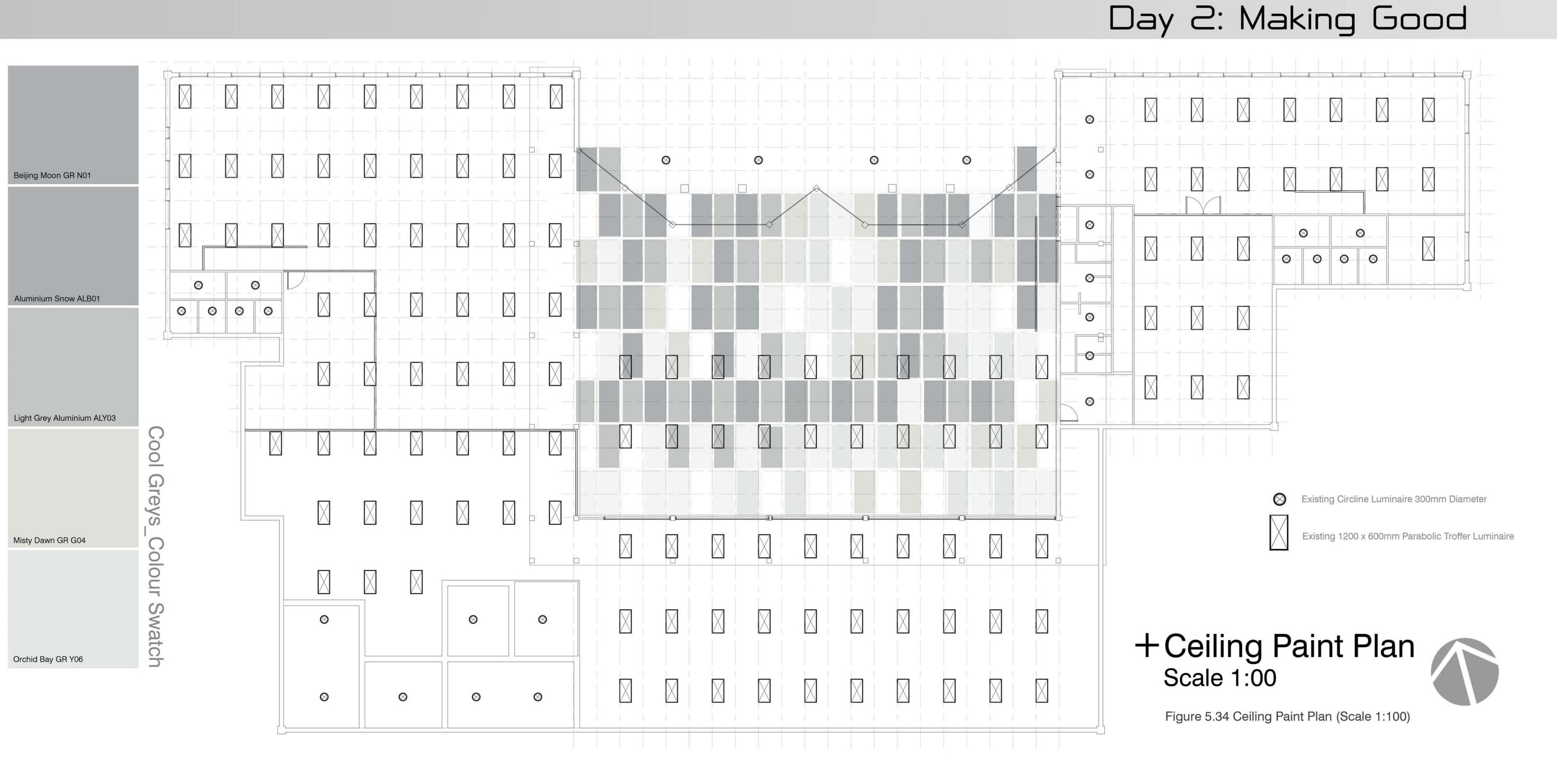
The design of components and product architectureThe selection and use of fasteners

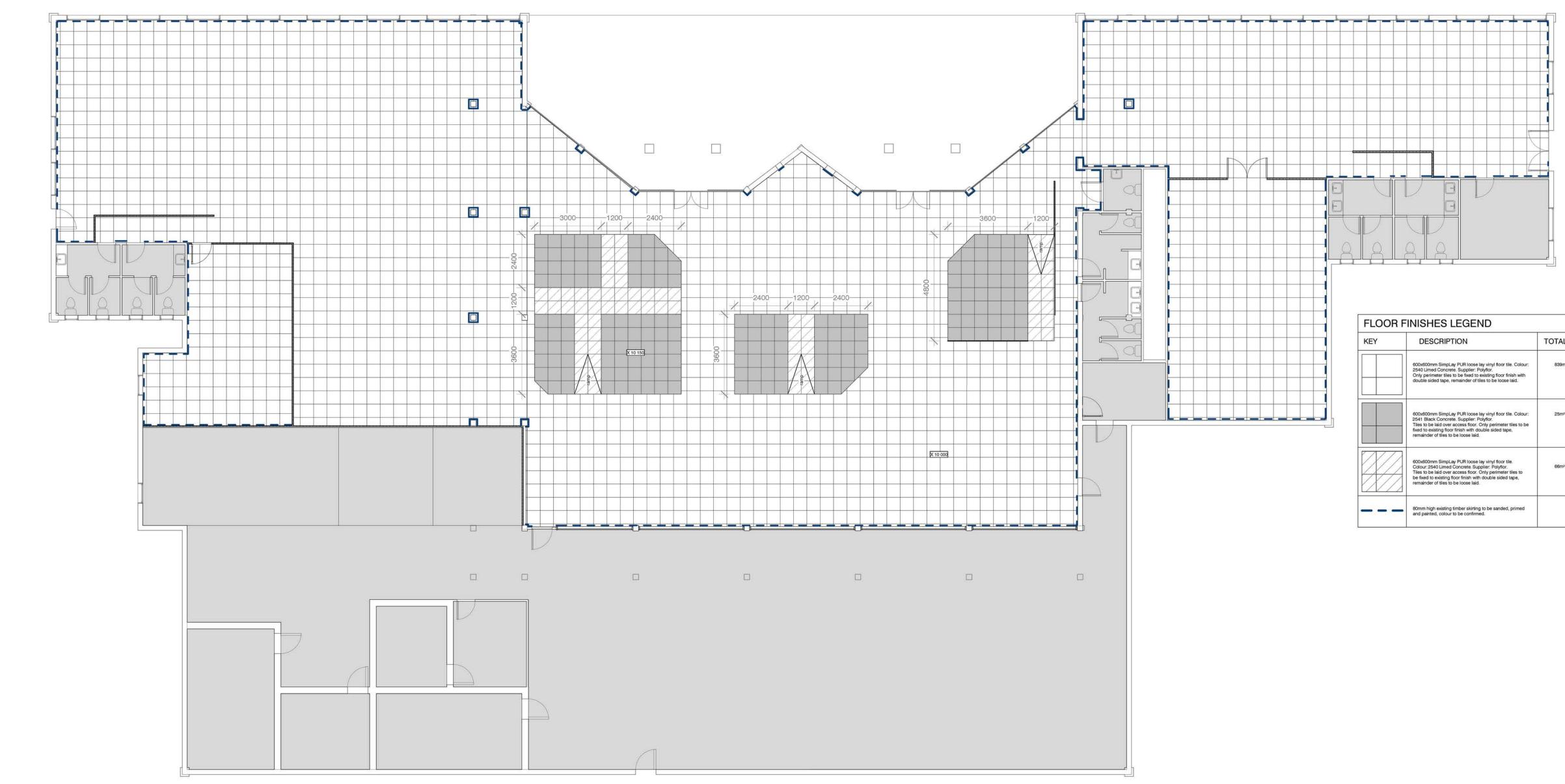
The Centurion Licensing Department Building:

In terms of the Centurion Licensing Department analysis was done in Chapter 2 about the permanent and non-permanent features within the building. This includes furniture both fixed and moveable as well as building elements. In order for the design proposal to be successful in terms of the design strategies developed from analysis and theory, the building needs to be adjusted in a way to provide and open plan interior layout. The reasoning behind this will explained further in the design strategies (c.f Disclosure). The analysis done provided a clear indication of what can be 'stripped away' as per the approach to all sites. This can be seen in the Demolition Plan. The approach strategy is then further implemented through treating existing features and adding new elements as can be seen in the Ceiling Paint Plan, New Partitions Plan and The New Floor Finishes Plan.

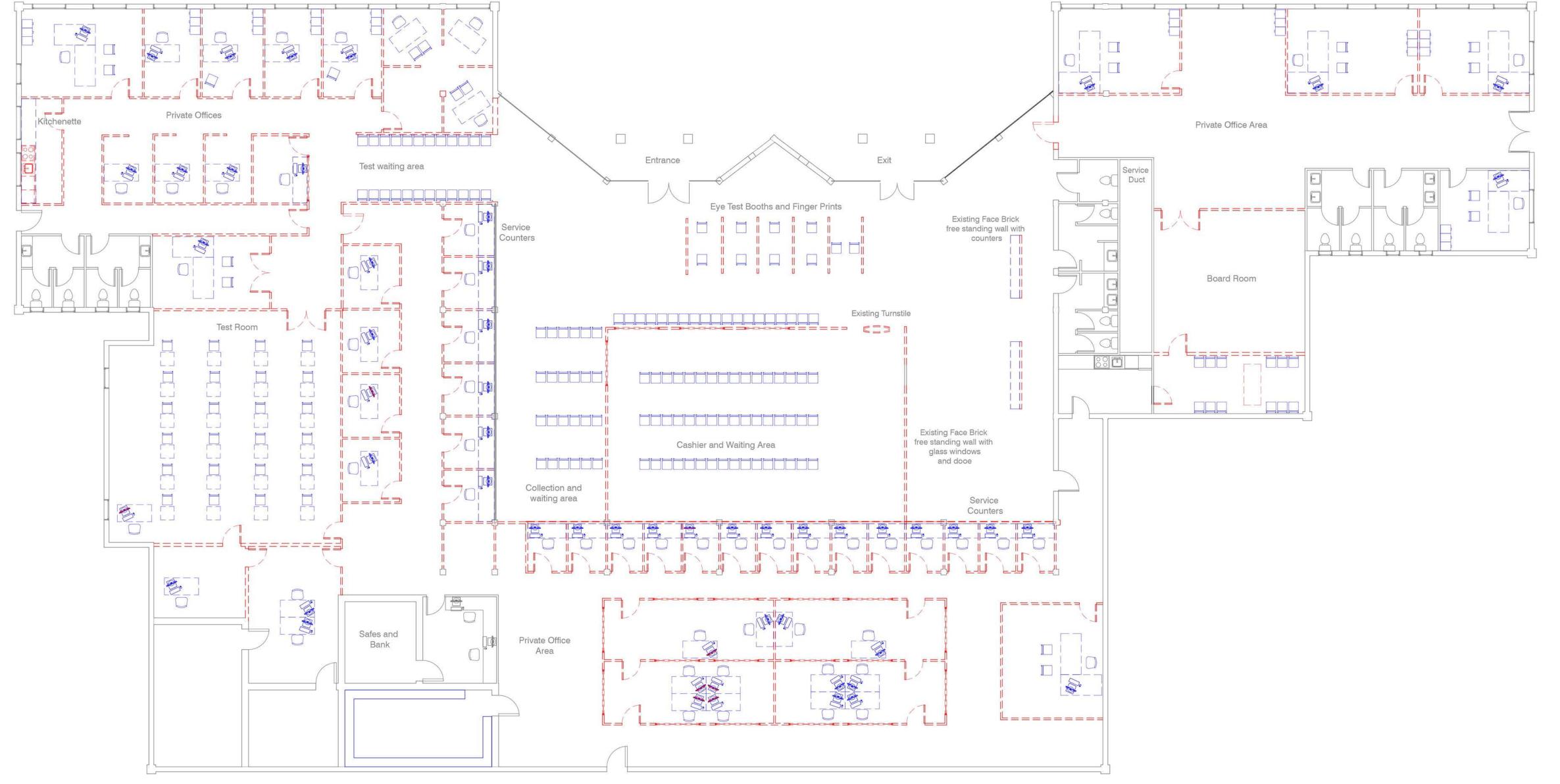


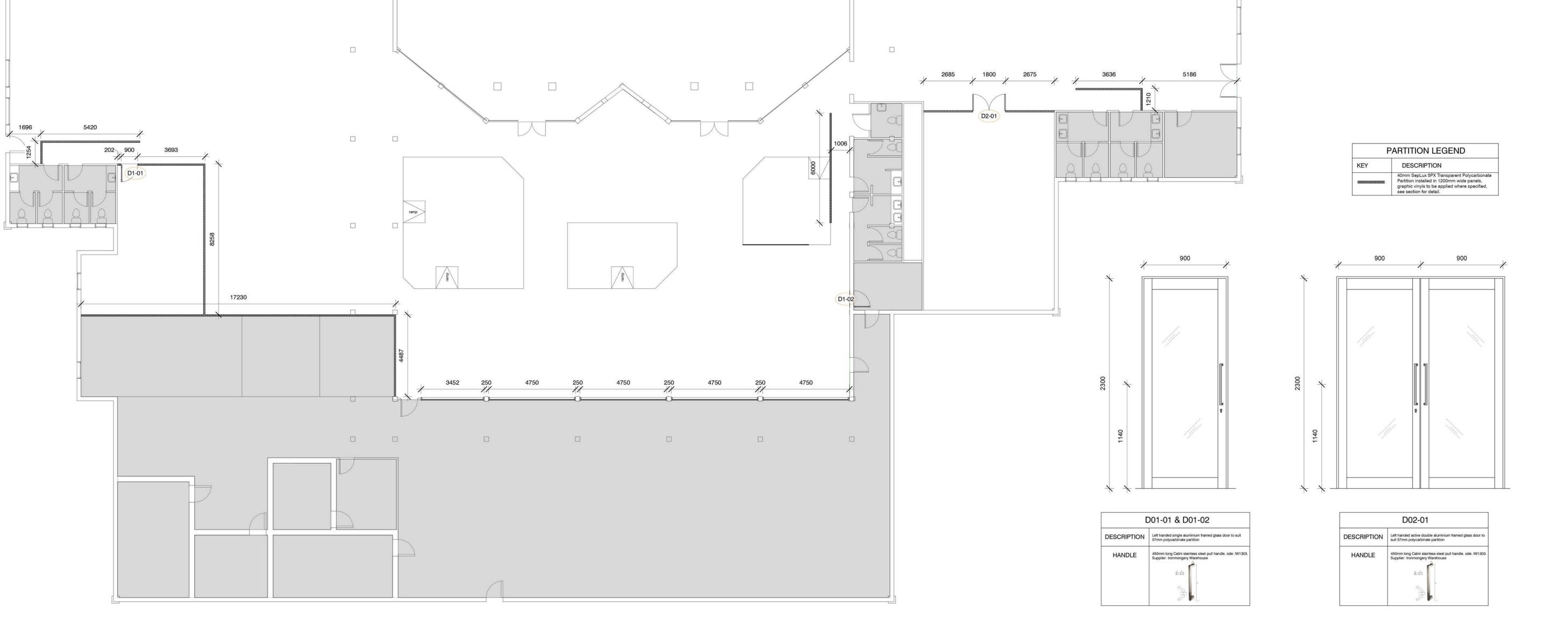


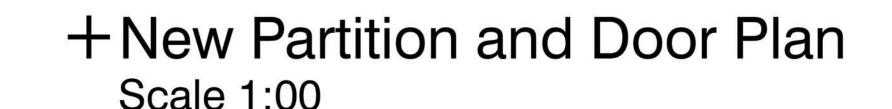












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+ Demolition Plan

Centurion Building Analysis: Highlighting elements that are permanent and Non-permanent

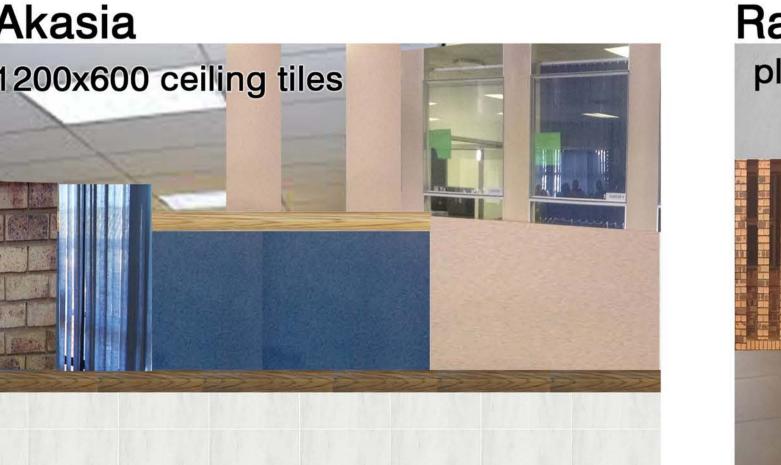


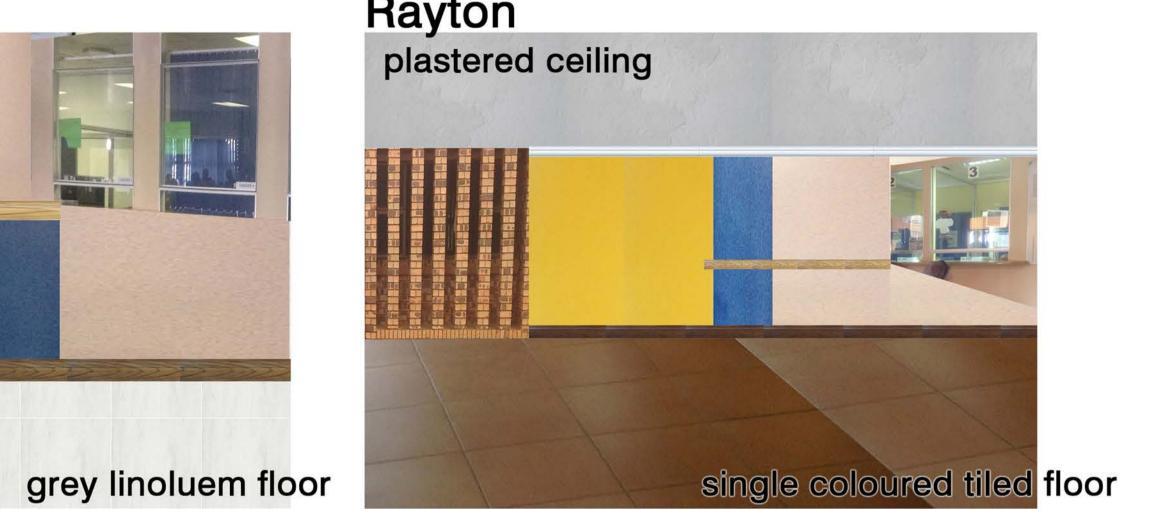
Figure 5.37 Centurion - Analysis



Material Analysis of all sites







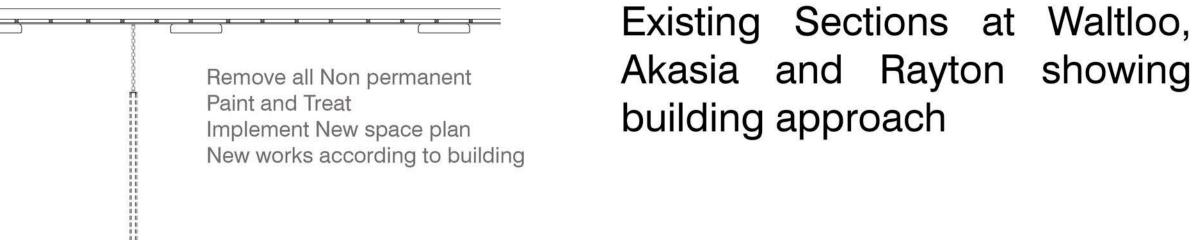
Similarities:

- facebrick walls
- drywall partitioning
- loose partitioning

Service Booths:

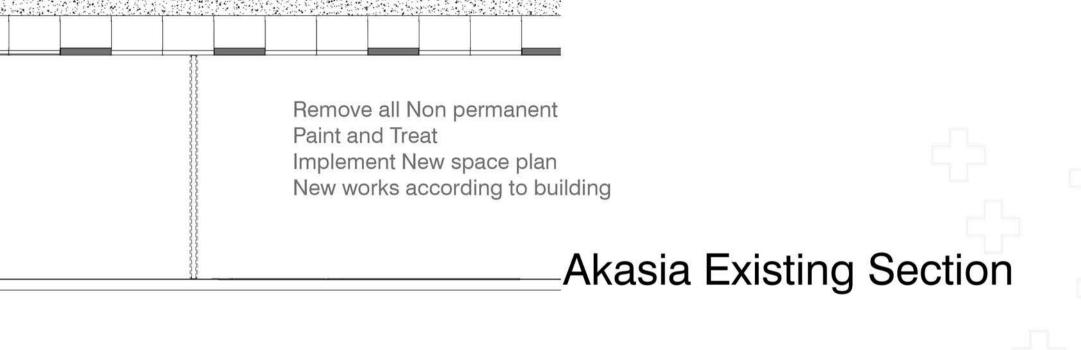
- glass partition for service counter
- veneered chipboard counters

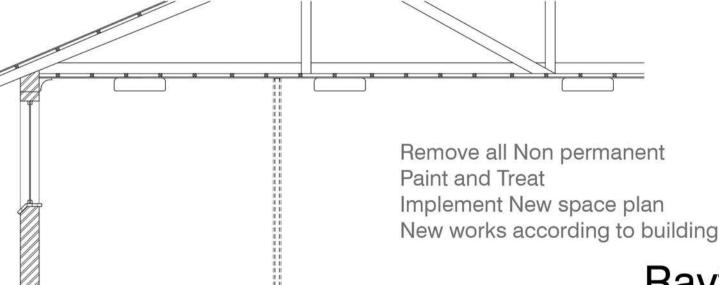
Existing Colour and Material Pallet



Akasia and Rayton showing building approach

Waltloo Existing Section

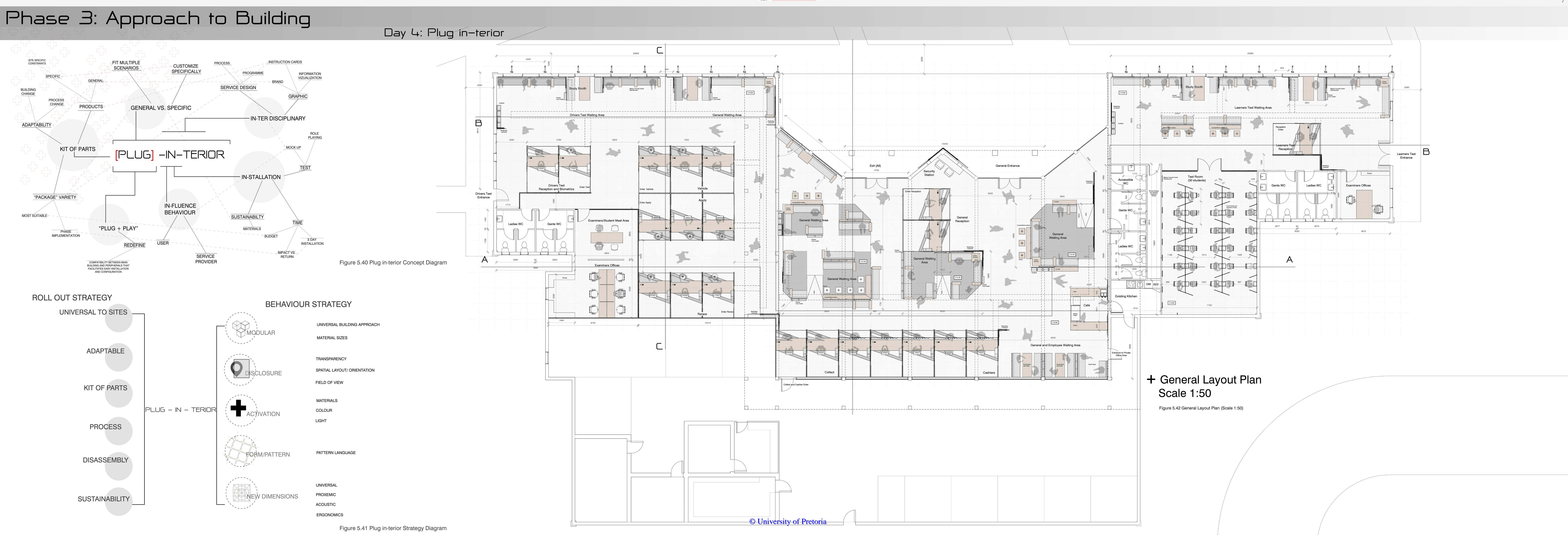




Rayton Existing Section

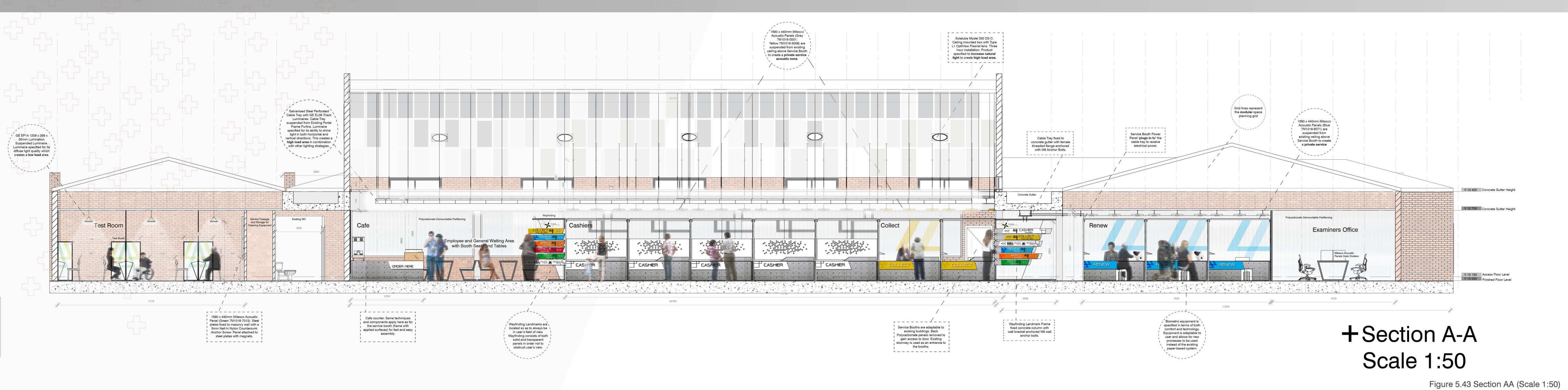
Figure 5.39 Other Sites existing sections

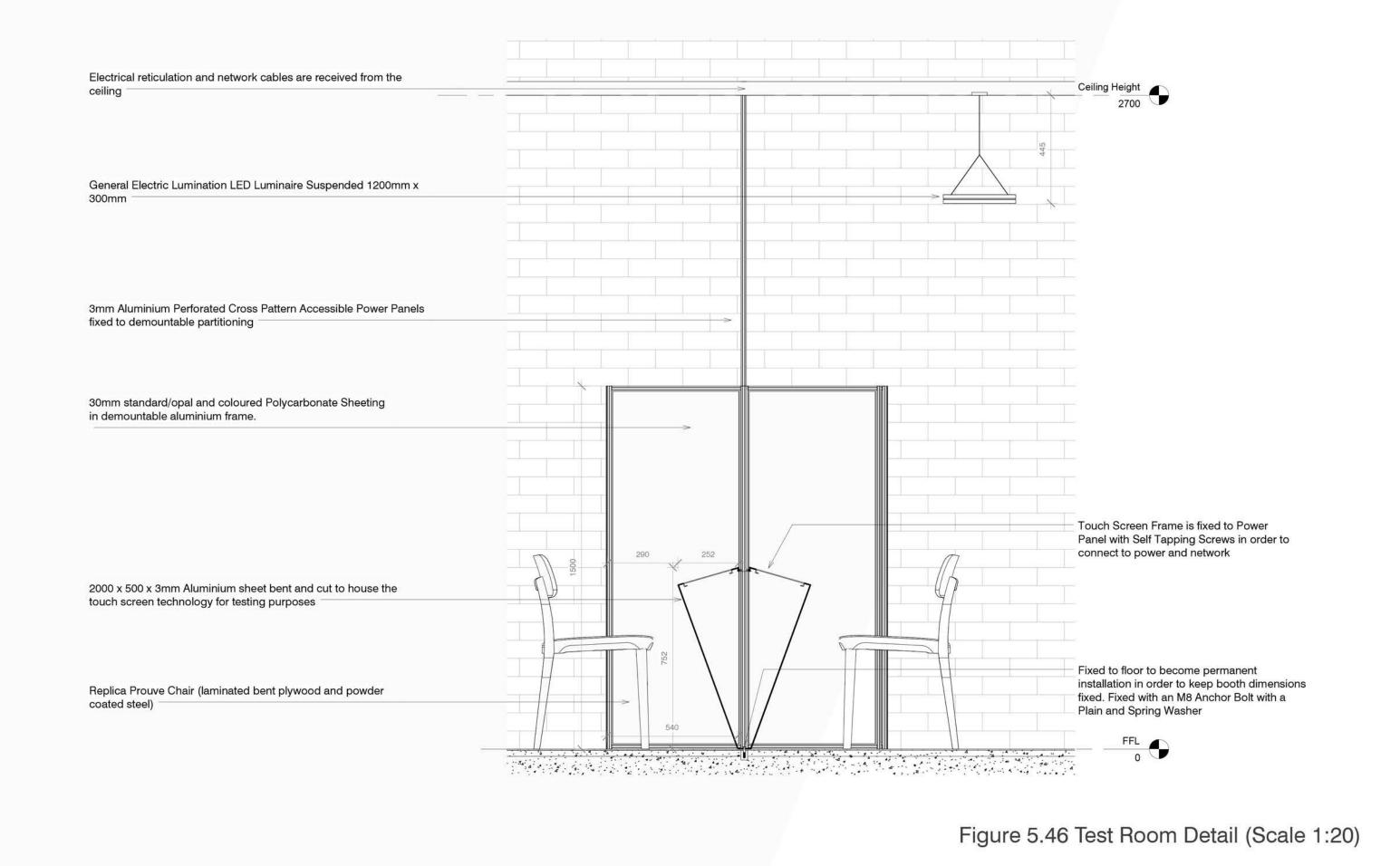
Analysis and Iteration

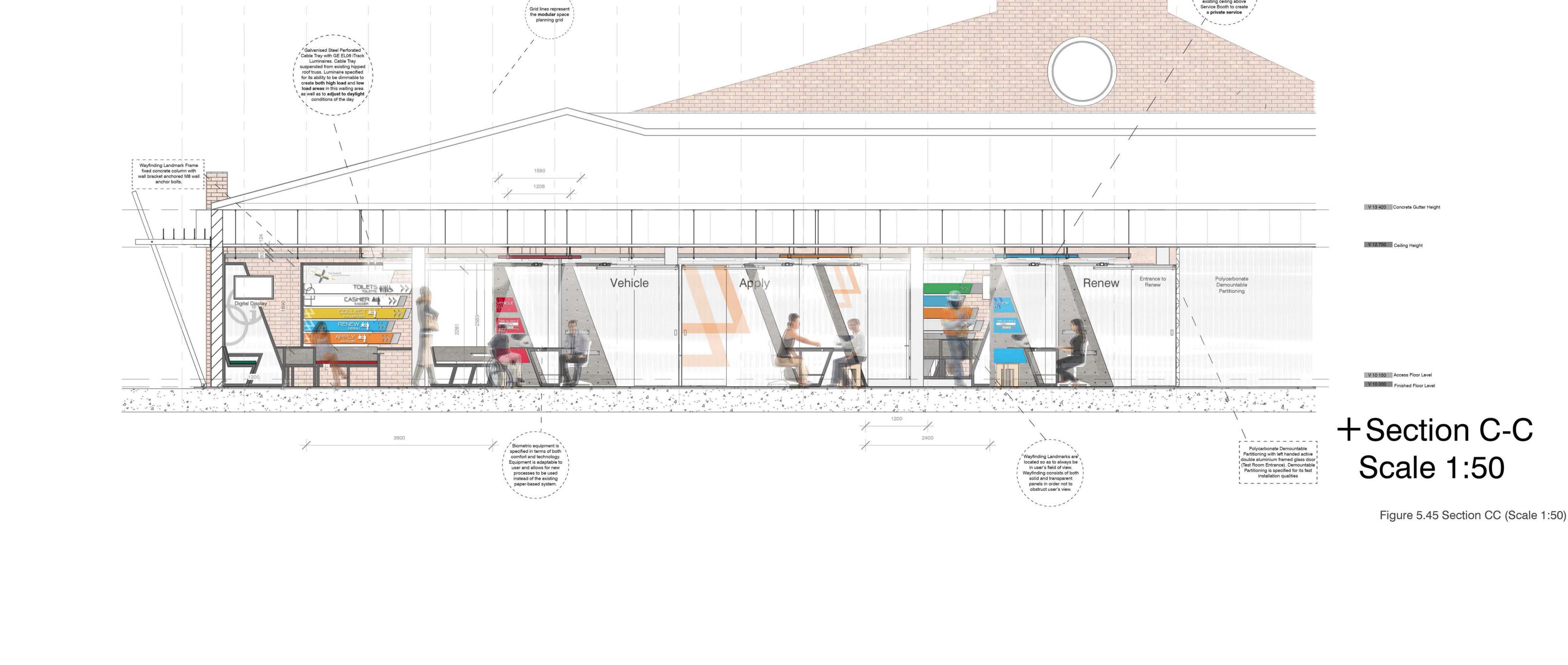


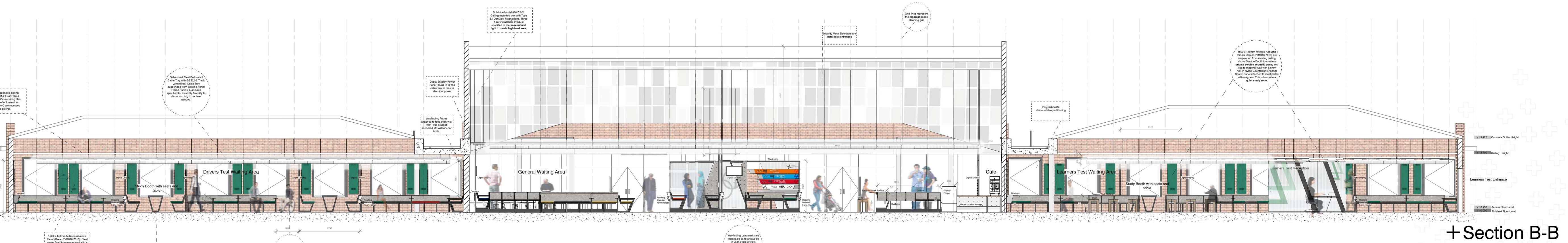


Phase 3: Plug in-terior







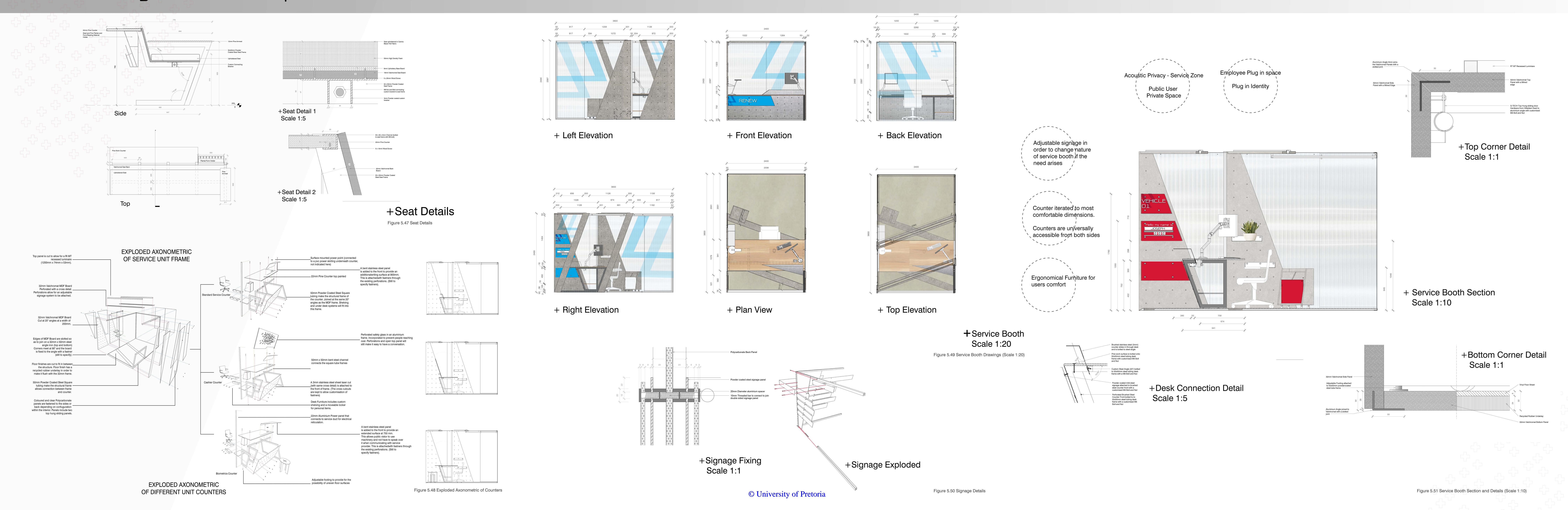


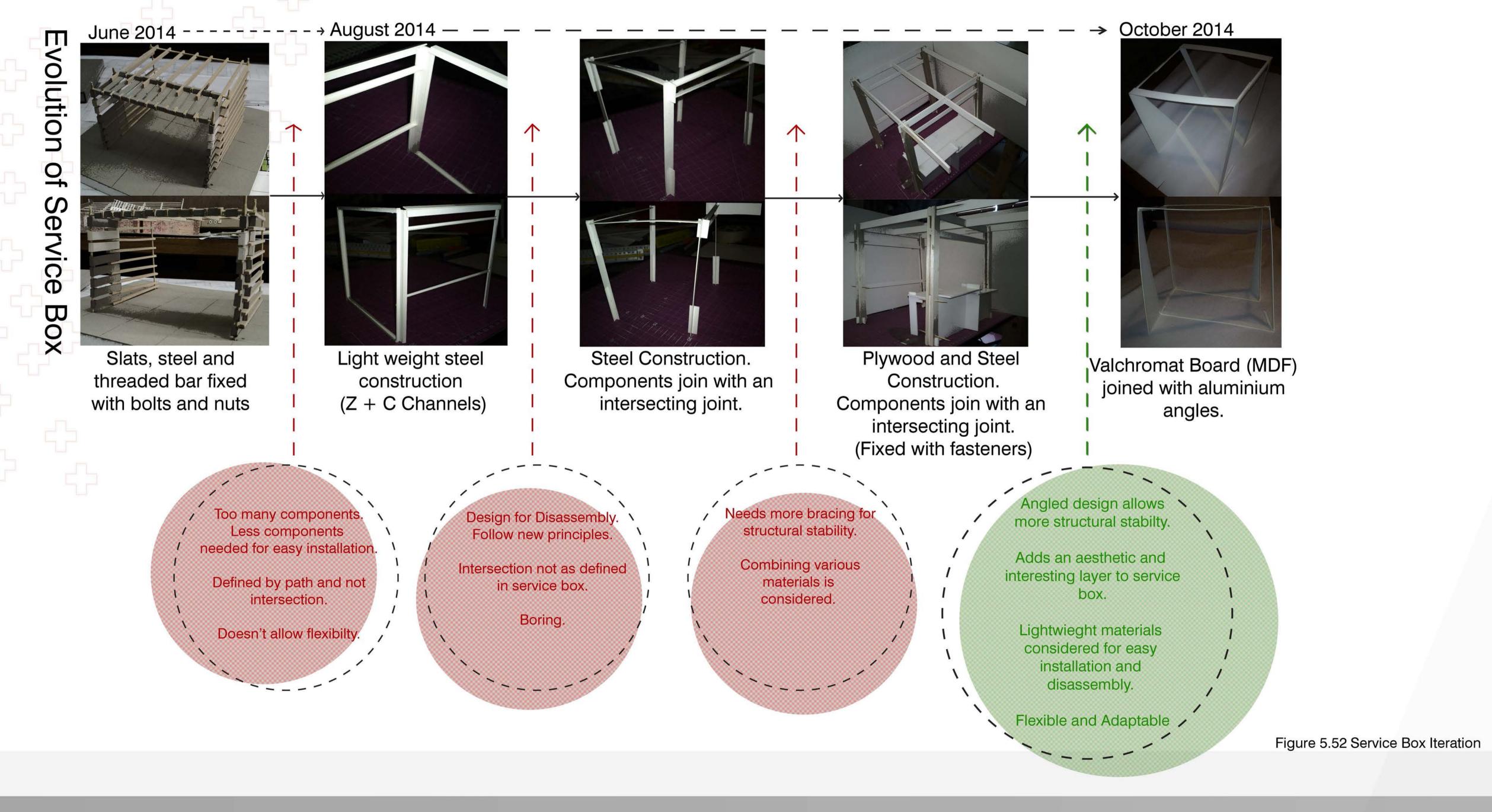
Scale 1:50

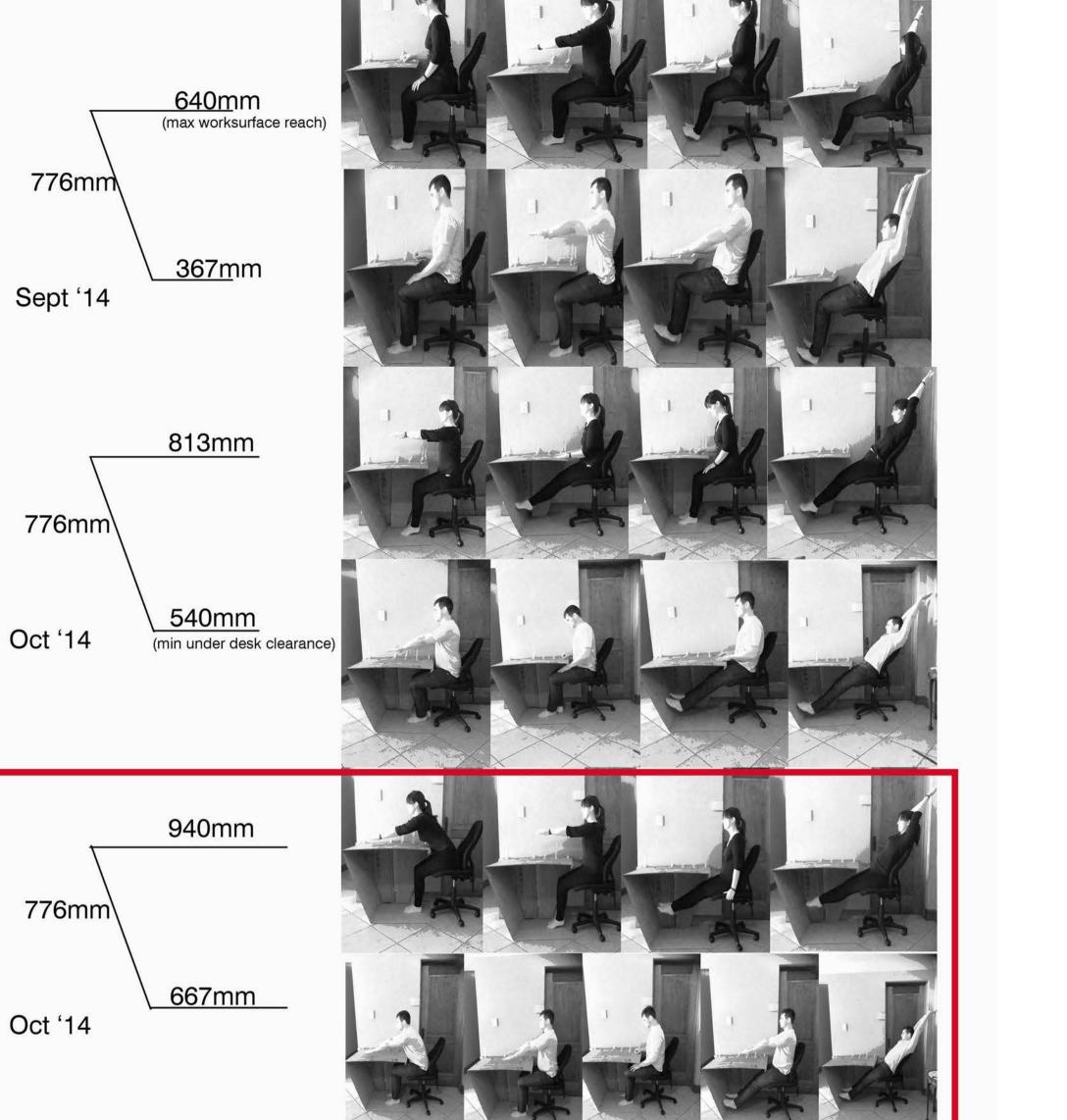
Figure 5.44 Section BB (Scale 1:50)

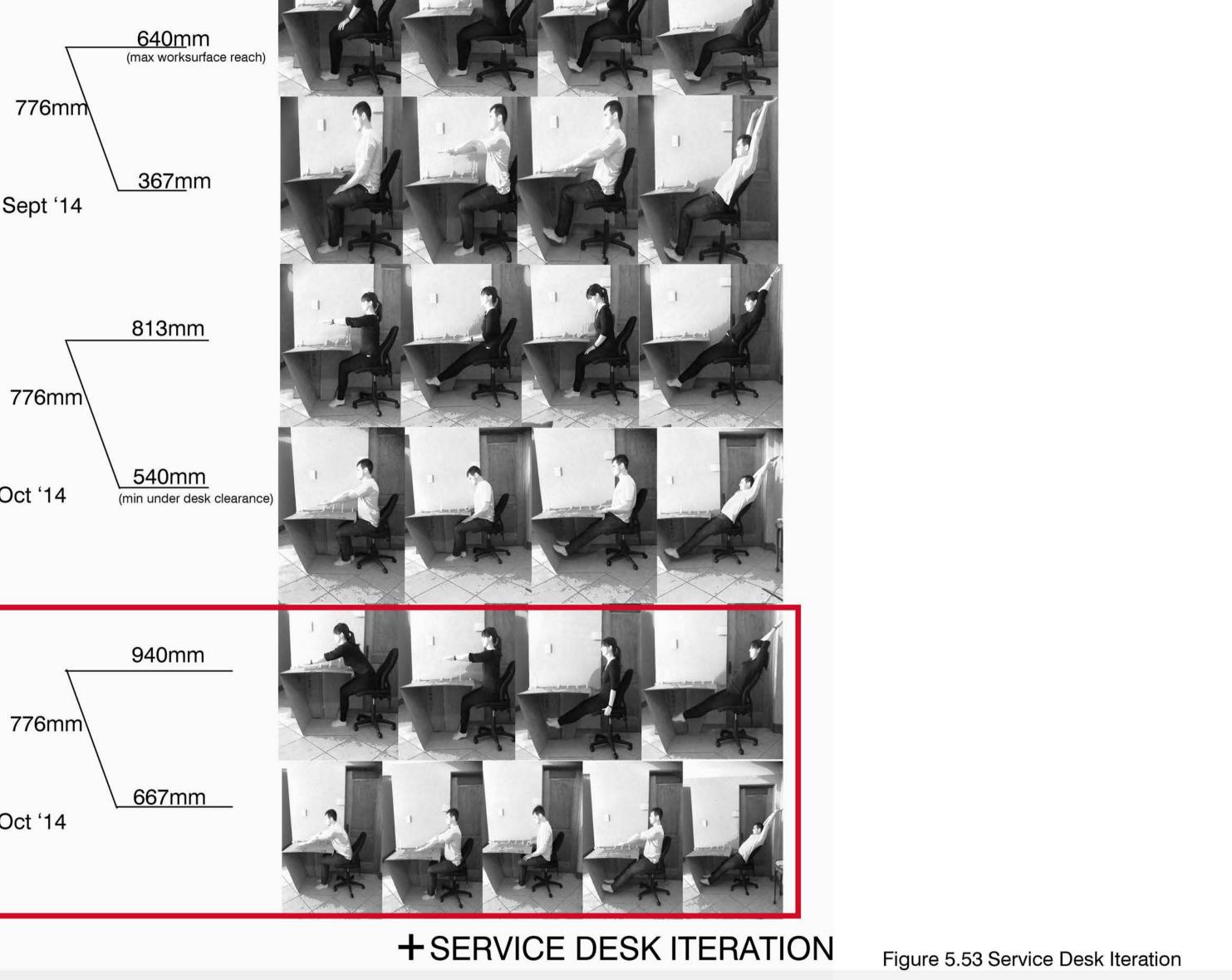
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Phase 3: Plug in-terior components



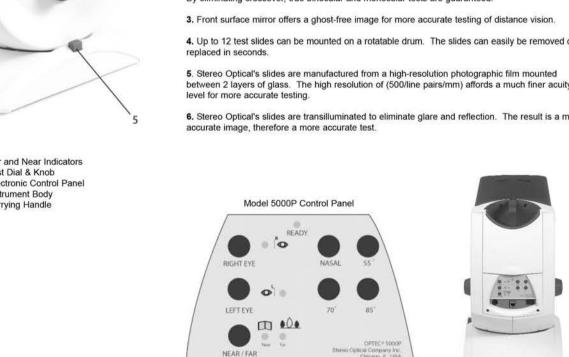






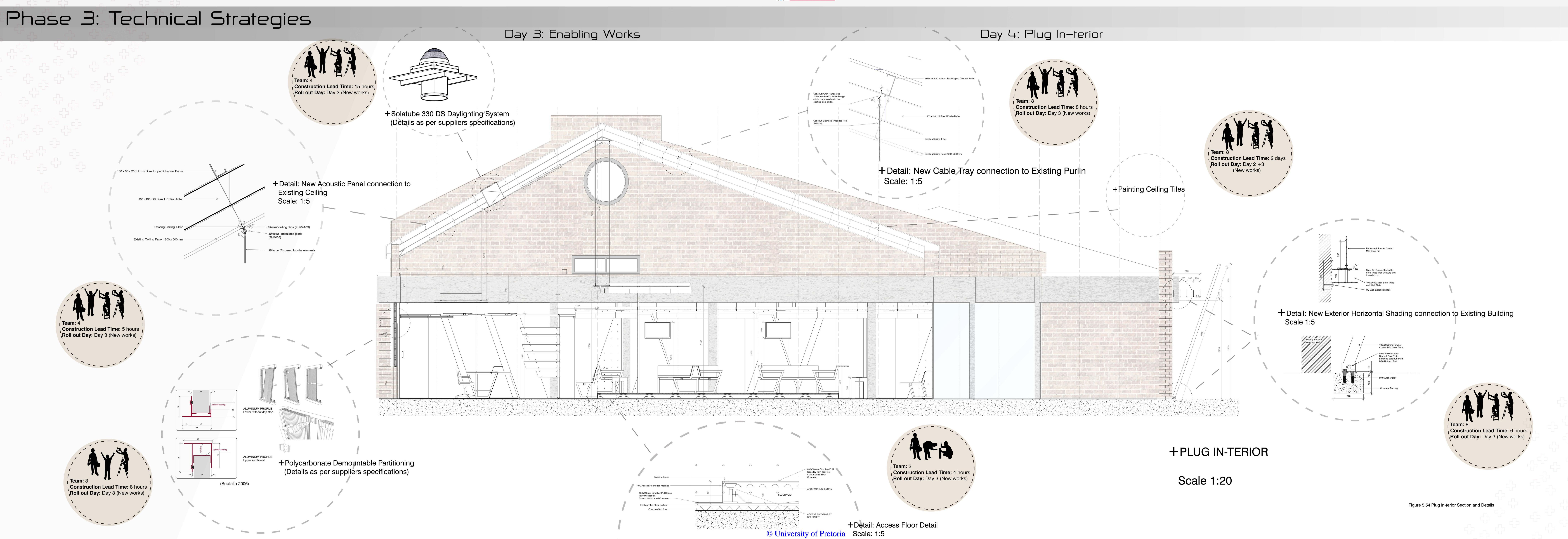
VICE FURNITURE	Office Chair	Monitor Arm	Desk Lamp	Test Room Chair
PLIER	DAUPHIN	Human Scale	Human Scale	Chair Crazy
E	Cosmos Mesh High Back Operators Chair	M2	Horizon	Replica Prouve
	* Horizontal stitched upholstery on	* Supports the vast majority of	 First utilization of Thin Film LED 	Laminated Plywood and powder
	seat and backrest	monitors in use today (up to 9	Technology	coated steel legs
	* 1 lever for gas height adjustment	D5kg)	Even plane of illumination casts	e-97)
	and 1 lever for backrest locking	*Interchangeable mounting options	just one shadow	
	facility in four positions	attach to a variety of work surfaces	 Produces ultra-wide footprint of 	
	* Fully synchronous I-Marc	*Integrated cable management	glare free, warm white light	
	mechanism with a 2:1 ratio between	hides cables within the arm	Perfect internal counterbalance	
	the seat and backrest	* Removable 180° stop protects	provides effortless, one-touch	
	* Basic height adjustable arm	walls and panels	positioning	
TURES	* Tension adjustment lever for	*Optional 305mm links provide	 Ultra-thin, seamless profile offers 	
	added backrest lumbar support	greater adjustability and flexibility	easy manoeuvrability and fewer	
	* Black nylon T base (66cm) on	* Arm reach: 500mm	moving parts	
	chrome castors	*Height adjustment range: 255mm	 Seven settings for dimmability 	
	*Vulcan seat and back	* Weight: 2.6 kg	(dims to 10% of maximum) for	
		* Finish options: Polished	increased energy efficiency and	
		Aluminium with White accents or	ergonomic function	
		Silver with Grey accents	 Nightlight at the lowest setting 	
		*Made primarily of steel and	(uses just one watt)	
		aluminium	 Soft start and adjustment is easy 	

5-year 24/7 warranty Excluded

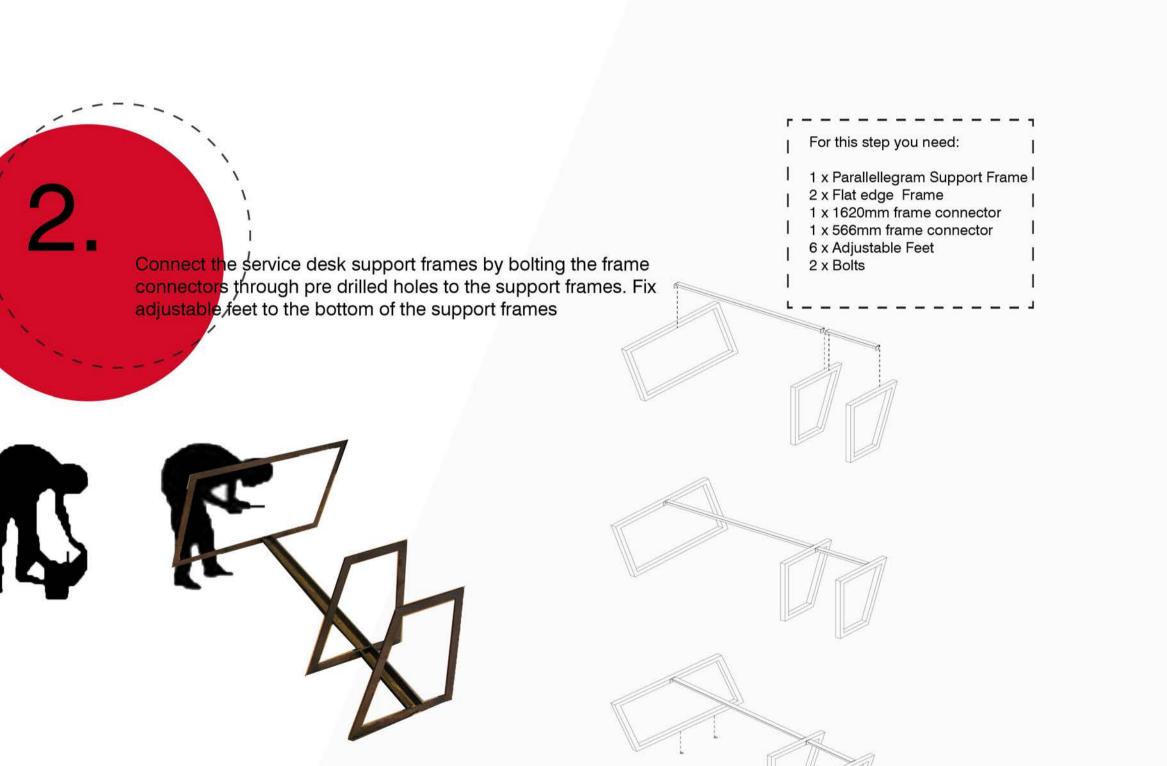


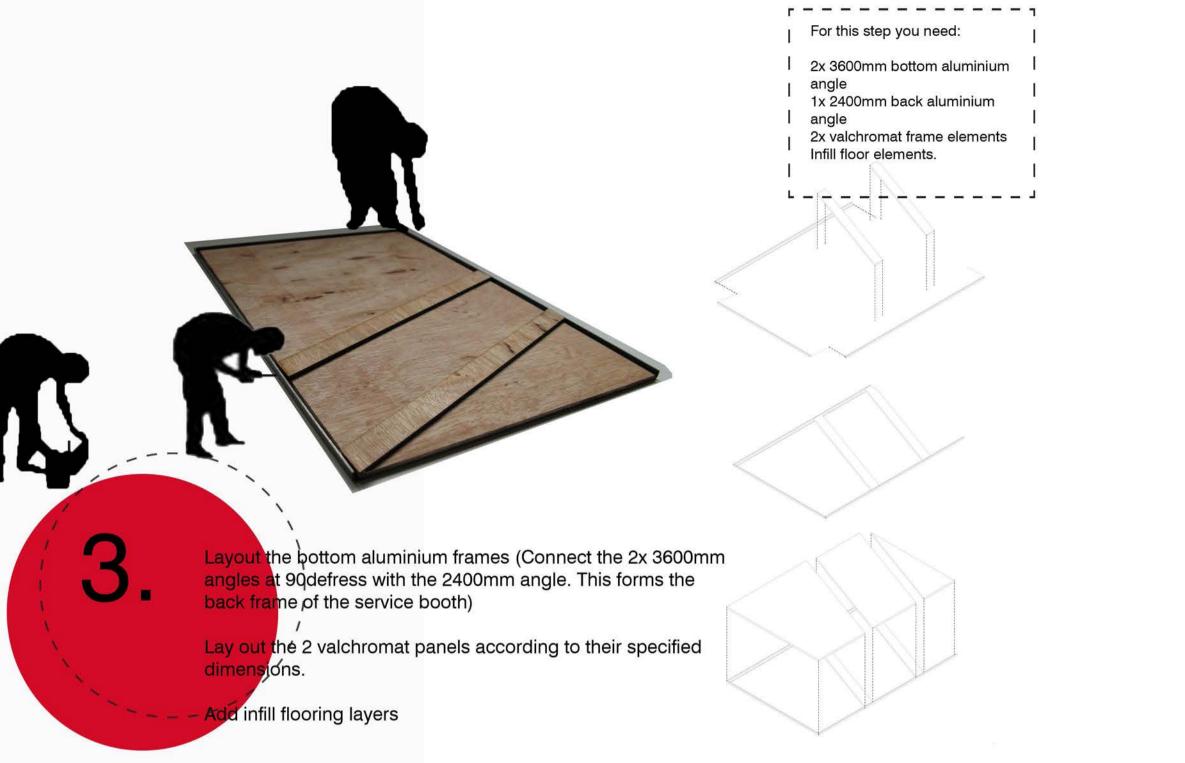


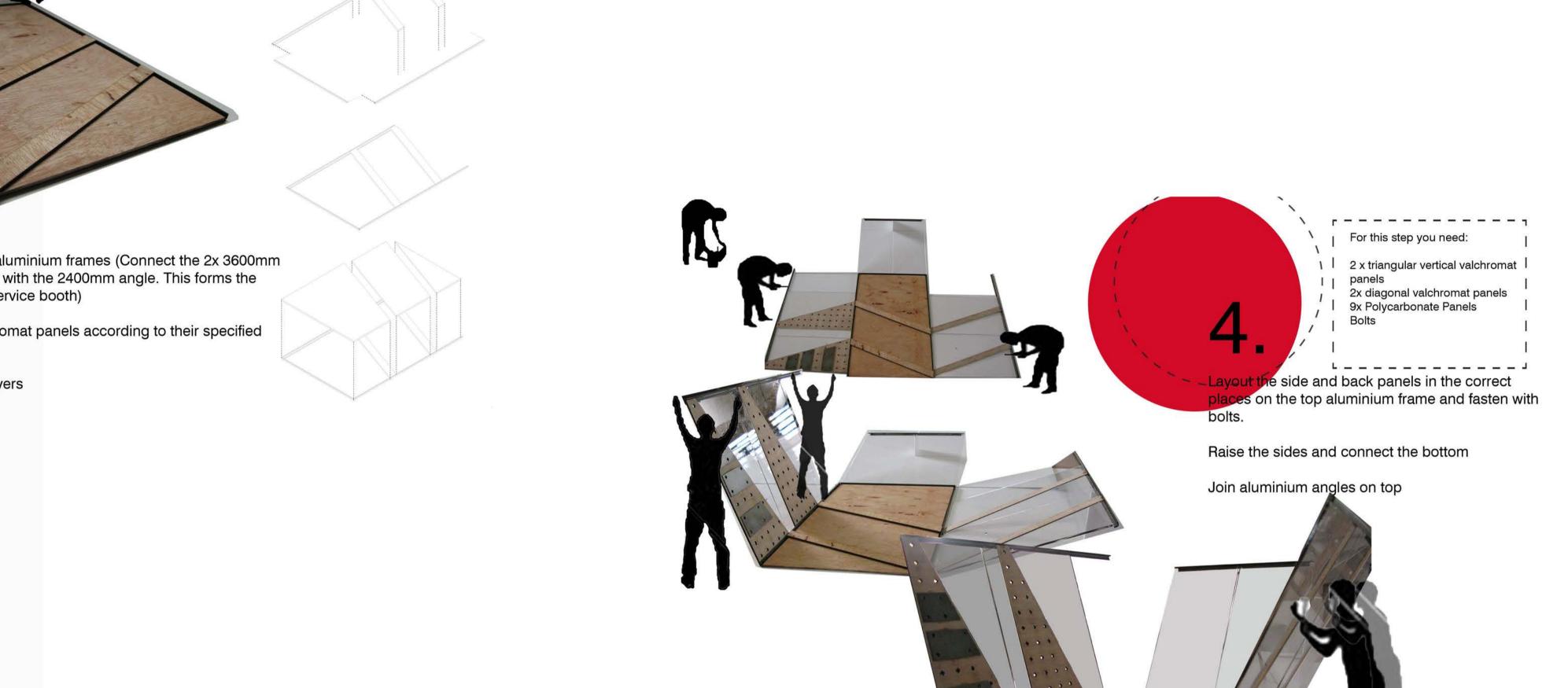
Analysis and Iteration

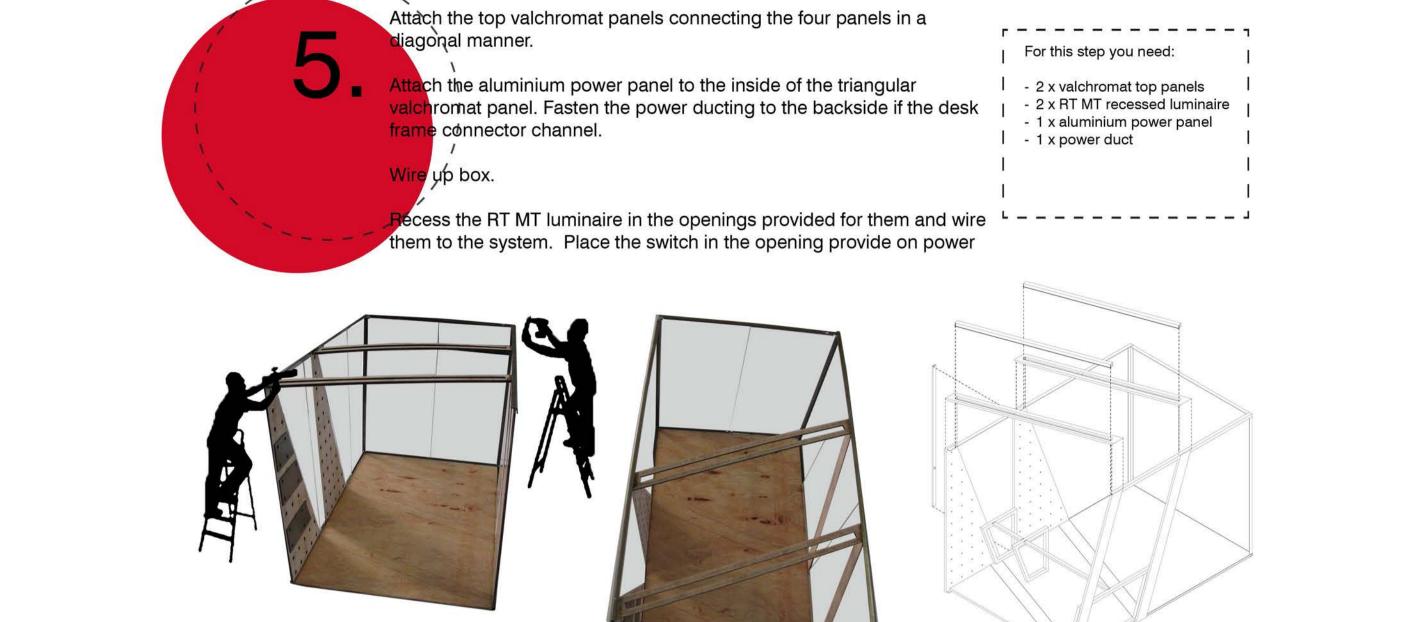


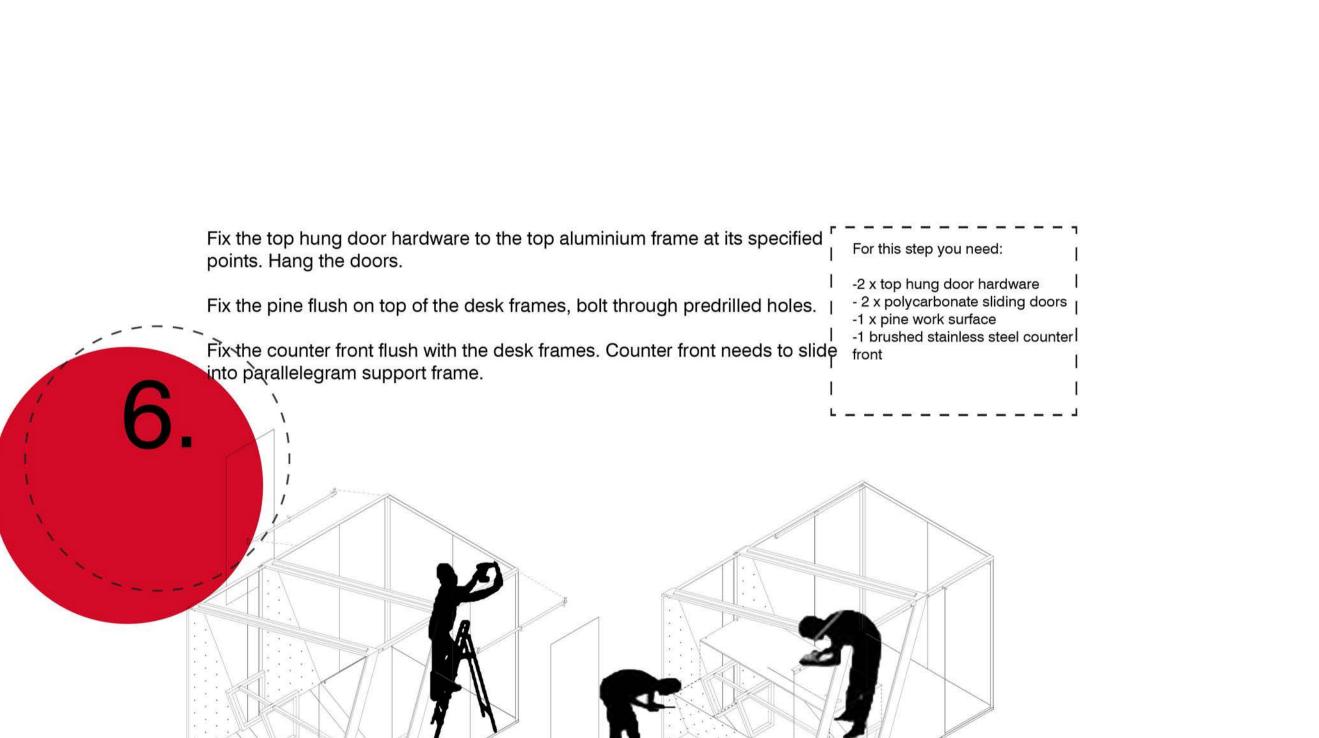












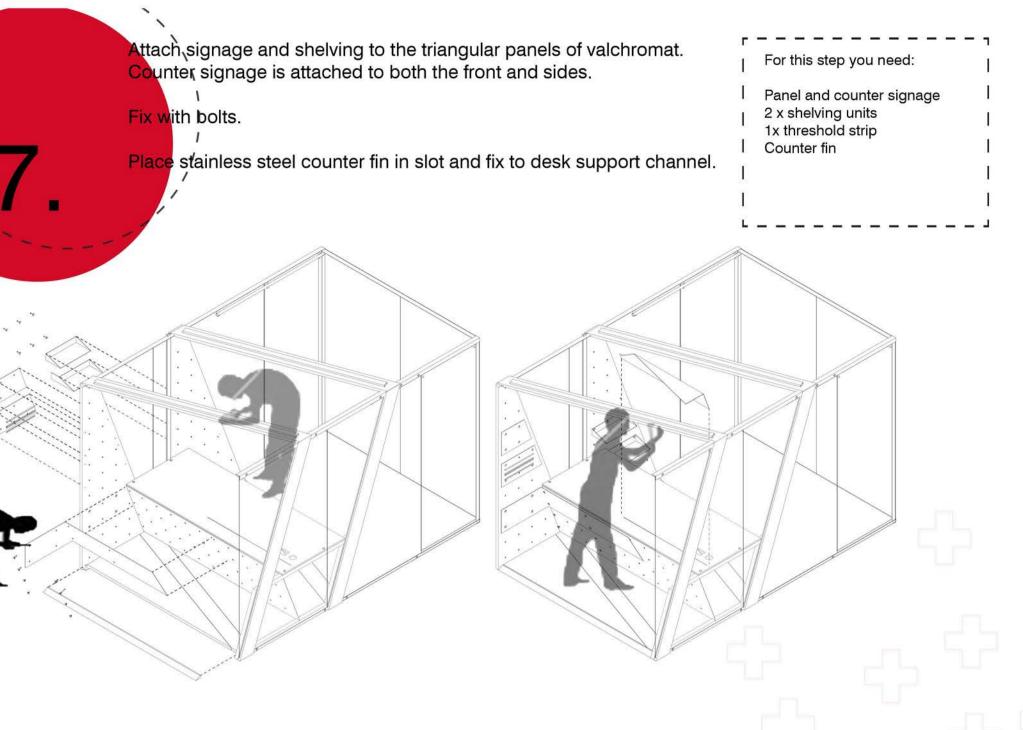


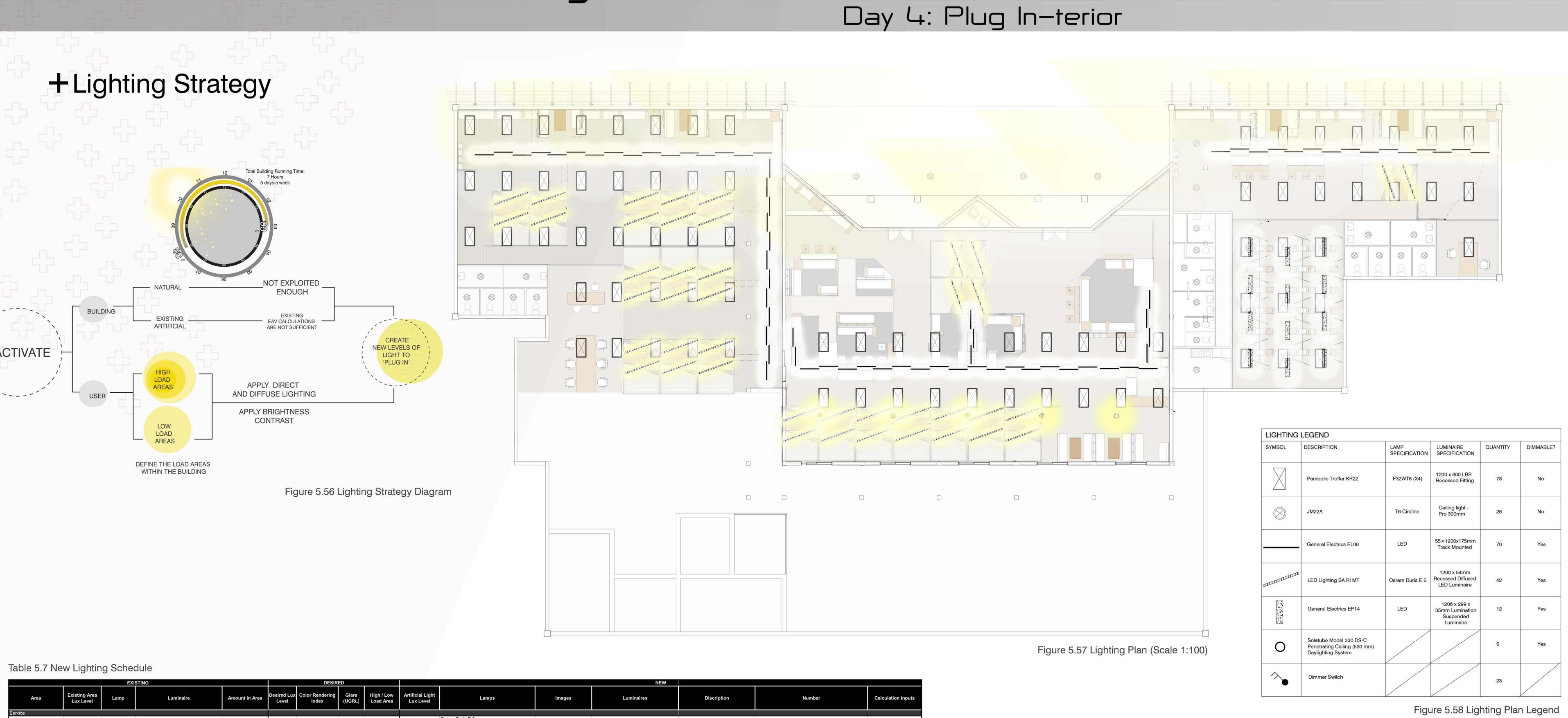
Figure 5.55 Instructional Guidelines to Service Box

Analysis and Iteration

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Phase 3: Technical Strategies



		EXI	STING			DESIR	ED					NEW			
Area	Existing Area Lux Level	Lamp	Luminaire	Amount in Area	Desired Lux Level	Color Rendering Index	Glare (UGRL)	High / Low Load Area	Artificial Light Lux Level	Lamps	Images	Luminaires	Discription	Number	Calculation Inputs
ervice	189 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	20 (x4 lamps each)	500	90	0.6	HIGH	100 lux	Osram Duris E 5 Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	High efficiency OSRAM LEDs with low thermal load. Ideal to create high load lighting area in conjunction with existing artificial light and newly introduced natural light.	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
Collect	118 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	20 (x4 lamps each)	500	80	0.6	HIGH	100 lux	Osram Duris E 5 Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	High efficiency OSRAM LEDs with low thermal load. Ideal to create high load lighting area in conjunction with existing artificial light and newly introduced natural light.	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
est Room	248.29 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	9 (x4 lamps each)	300	80	0.6	LOW	100 lux	General Electrics Product code: 67646 Dimensions: 1206 x 299 x 35 mm Wattage: 55 Voltage: 120 Colour rendering: 80 Life: 50 000h Luminous Flux: 4000lumen Colour Temperature: 3500 k		General Electrics EP14	Lumination Suspended Luminaire	A Uniform illuminating surface. Diffused light distrubuted is sufficient in creating a low load area for test room. Energy Saving	Eav 110.519 n 15 fl 3900 MF 0.35 UF 0.45 Awp 77.7
nreshold										Osram Duris E 5					
Reception	118 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	20 (x4 lamps each)	500	80	0.6	HIGH	100 lux	Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	with existing artificial light and newly introduced	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
Reception: Learners	203 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	14 (x4 lamps each)	500	80	0.6	HIGH	100 lux	Osram Duris E 5 Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	High efficiency OSRAM LEDs with low thermal load. Ideal to create high load lighting area in conjunction with existing artificial light and newly introduced natural light.	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
Reception: Drivers	189 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	32 (x4 lamps each)	500	80	0.6	HIGH	100 lux	Osram Duris E 5 Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	High efficiency OSRAM LEDs with low thermal load. Ideal to create high load lighting area in conjunction with existing artificial light and newly introduced natural light.	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
Cashier	118 lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)	20 (x4 lamps each)	500	80	0.6	HIGH	100 lux	Osram Duris E 5 Product code: RI MT Dimensions: 1200 x 740 x 530 mm Wattage: 40 Voltage: 220 Colour rendering: 80 Life: 50 000h Luminous Flux: 3000lumen Colour Temperature: 4000 k		LED Lighting SA RI MT	Recessed Diffused LED Luminaire	High efficiency OSRAM LEDs with low thermal load.	Eav 107.86 n 2 fl 3000 MF 0.38 UF 0.27 Awp 5.76
CIRCULATION										General Electrics				Transparent when off – creating less visual clutter in	
nterior	203lx; 58.99lx; 218.36lx	F32WT8 (X4)	Deep Cell 2 x 4 Parabolic Troffer (D3)		200	80	0.4	HIGH	200 lux	Product code: EL Series Dimensions: 51 x 1219 x 175 mm Wattage: 71 Voltage: 220 Colour rendering: 82 Life: 50 000h Luminous Flux: 4600lumen		General Electrics EL06 iTrack / Canalis	Track Mounted	the environment Great 360 degree distribution Digital dimming (DALI) Capable of being linked to sensors and controlled in conjunction with natural light. This luminaire is the ideal fit in creating high load areas as its illuminance is controllable. It works in accordance with natural	Eav 208.111 n 30 fl 4600 MF 0.47 UF 0.4 Awp 124

+Acoustic Strategy

The reverberation time is the most important variable when describing acoustic character as it specifies the duration of an echo and is influenced by the volume of the room, the nature of the quality of sound absorption in chosen materials as well as the occupants in the room (Hausladen and Tichelmann 2010:39). LEED credit the design of acoustic spaces that promote occupants well-being and a comfort and have a set minimum reverberation time that should be met for an effective acoustic design. These have been listed in term of the interior acoustical zones within the interior.

As mentioned before the approach is to works backwards from discomfort to comfort. The absorbing materials and by arranging spaces to dampen rather than magnify sound reverberation. This will be done through calculating the Reverberation time of the building as an empty shell (after stripping back and before new work) and then to iterate the calculation as material choices are added until a comfortable reverberation time is met. This is done using the Sabine Formula.

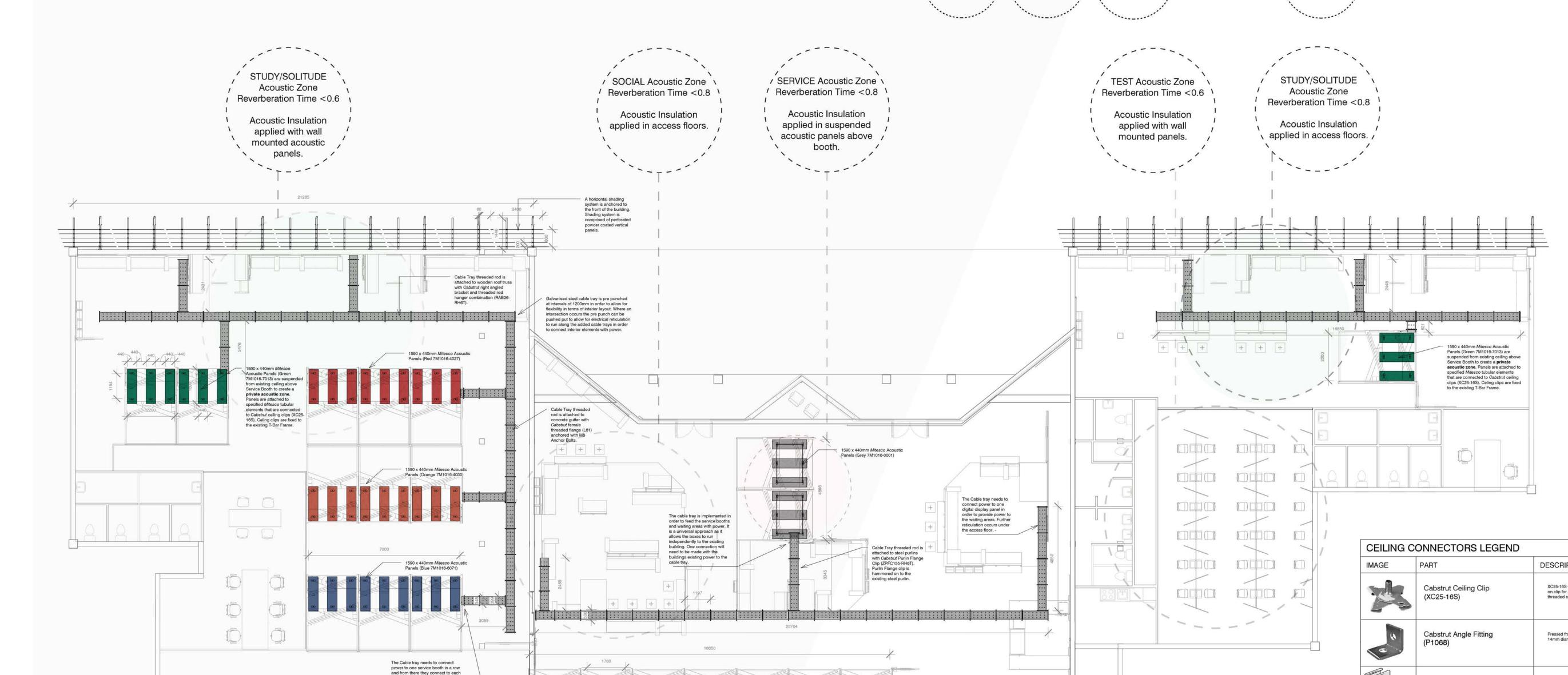


Figure 5.62 Ceiling Plan (Scale 1:100)

NRC VALUE

Right Angled Bracket/ Threaded Rod Hanger Combination (RAB26-RH6T)

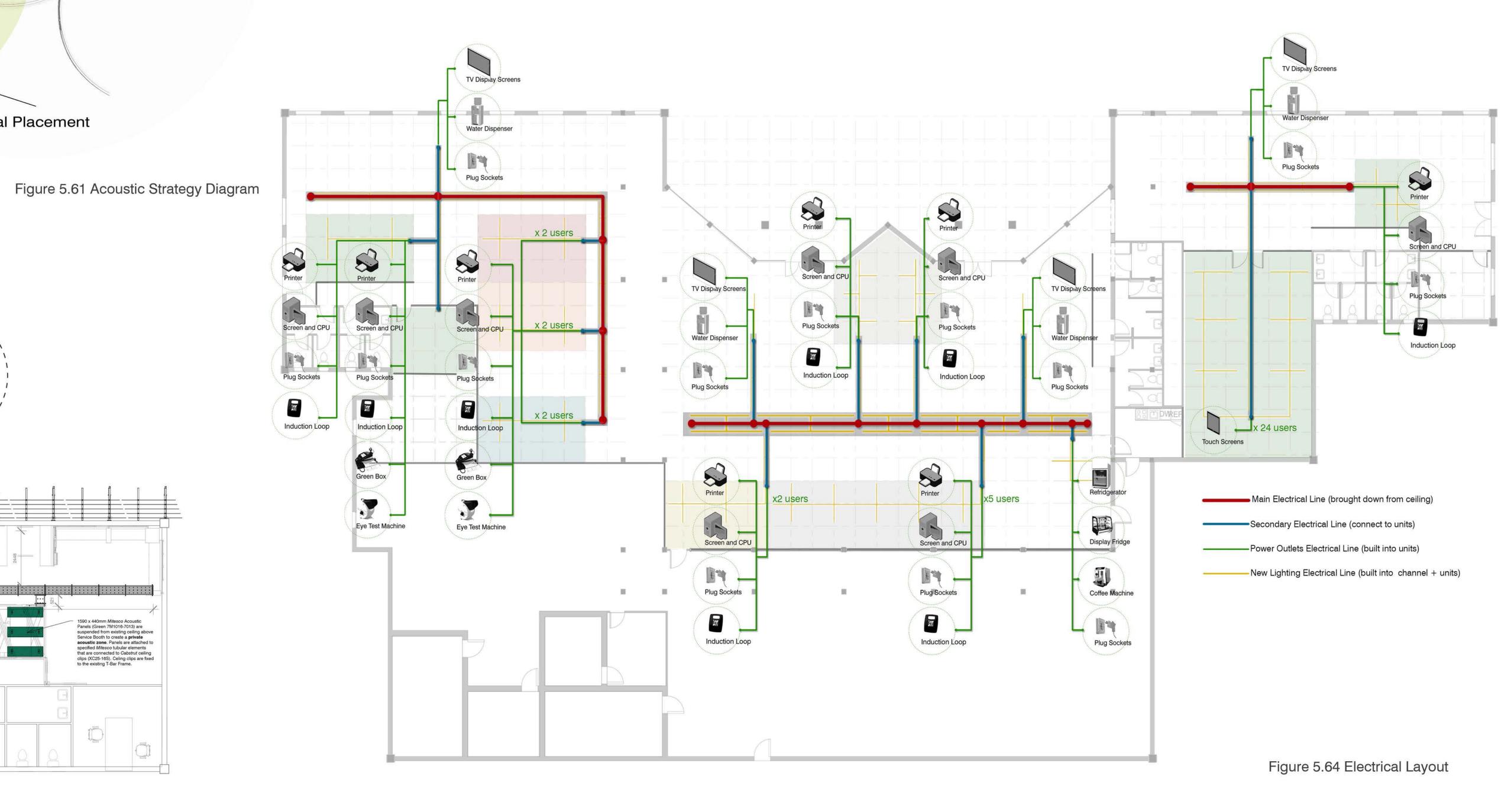
Mitesco Net Chrome Tube
Supports
(7M4112)

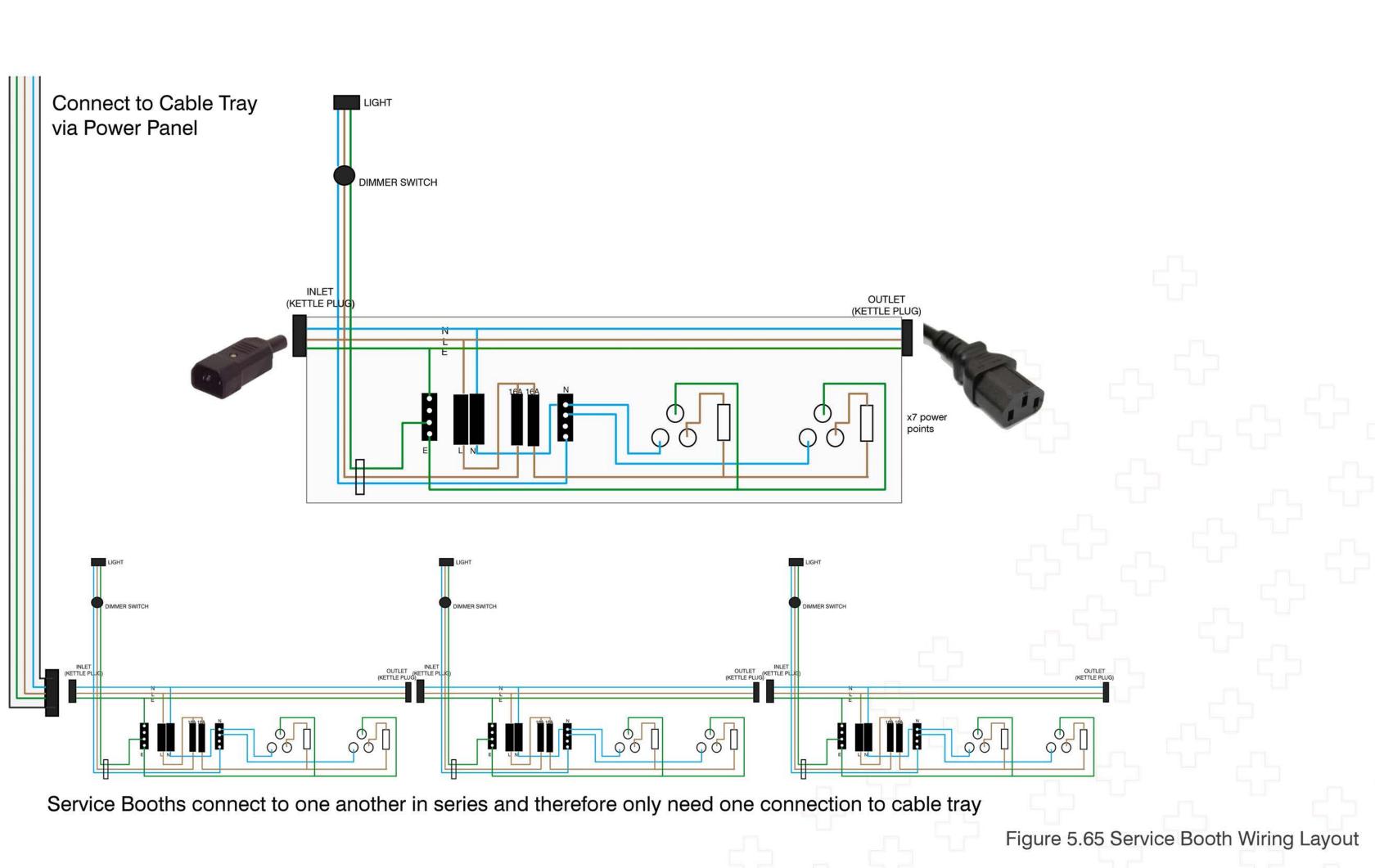
Mitesco Articulation Joints (7M4005)

Figure 5.63 Ceiling Plan Legend

+Electrical Strategy

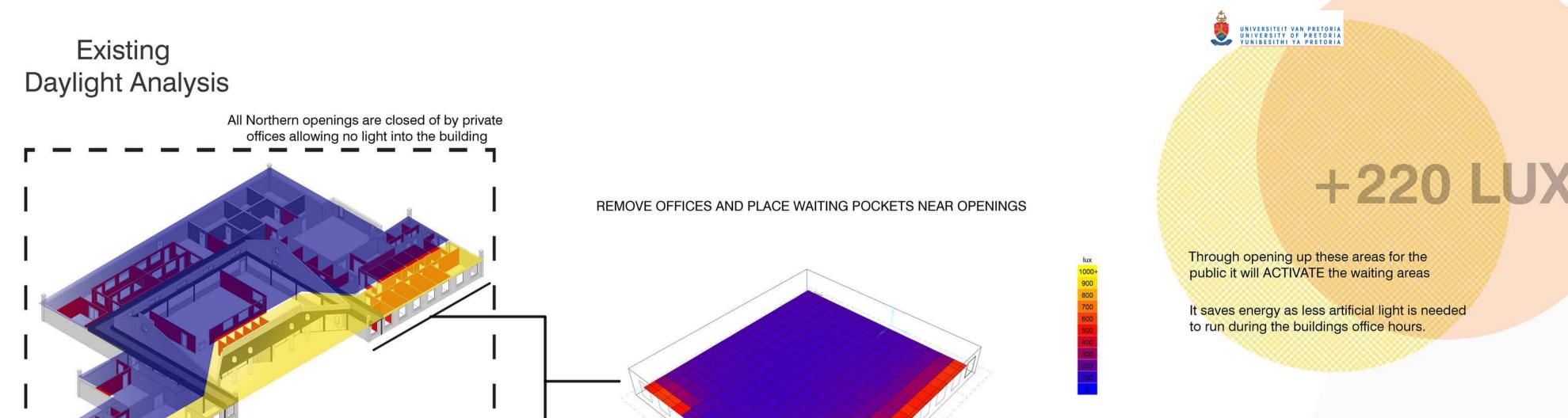
As a Universal approach to buildings is needed the interior components run independently from the existing building and doesnt have to conform to the current electrical structure. Only one connection to the buildings electrical supply is needed.





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+ACTIVATE METHODS TO INCREASE NATURAL LIGHT SYSTEMS INVESTIGATED TO INCREASE NATURAL LIGHT L _ _ *_* _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Evening moving it to the southern side of the roof Inserting Large automatic opening skylights on the hip of the roof floods the interior This is the current situation natural light but its diffuser provides too much light. tubing transmits the visible only at between 100-200 lux. with too much light. provides significant blockage of Infrared (IR) This will be used as a solution This approach is not feasable in terms of construction time an This approach is not construction time in term wavelengths greater than user comfort due to heat gain feasable in terms of 900 nm, which is the main within the building. construction time of gain within the building cause in solar heat gain. deliverables and user comfort due to heat gain 3 tubes bring about an within the building. increase of 200 lux into the (Basso Lucernari n.d) Figure 5.59 Lighting Analysis New Natural Light



Depth :		
= Height	1500/tan (76.8)	Where:
/SA)	=572.2mm	Horizontal Shadow
PERSONAL PROPERTY.	572.2/tan (21.7) =202 mm	Angle (HSA) = 21.7mm Vertical Sun Angle (VSA) = 202mm
		Height= 1500mm
		(Ecotect 2011)

Figure 5.60 Lighting Analysis Existing Natural Light

Table 5.8 Existing Reverberation Time

	Existing Reverberation Times									
Building Area	Reverberation Time	Room Volume	Frequency	Effective Surface Area Total	Sabine Value	Total Volume				
Part 1	2.76	3079.20	500	179.84	0.161	3079.2				
Part 1	3.00	3079.20	1000	165.06	0.161	3079.2				
Part 1	2.98	3079.20	2000	166.40	0.161	3079.2				
Part 2	1.34	396.90	500	47.77	0.161	396.9				
Part 2	1.56	396.90	1000	41.00	0.161	396.9				
Part 2	2.08	396.90	2000	30.70	0.161	396.9				
Test room	1.57	210.60	500	21.53	0.161	210.6				
Test room	1.66	210.60	1000	20.44	0.161	210.6				
Test room	1.60	210.60	2000	21.24	0.161	210.6				

Table 5.9 New Materials

on materiale							
New Materials	Surface Area	Fre	equency		Ca	alculations	
Surface	Total (sq. m)	500	1000	2000	500	1000	2000
Vinyl PUR Floor Surface	696.00	0.20	0.20	0.20	139.20	139.20	139.20
Valchromat Frame Structure and Seating	57.60	0.87	0.98	0.42	50.11	56.45	24.19
Wool Fibre Upholstery	20.16	0.88	0.96	0.93	17.74	19.35	18.75
Acoustic Panelling (Mitesco)	41.98	0.55	0.84	0.89	23.09	35.26	37.36
Polycarbonate Partition Wall	115.20	0.44	0.53	0.78	50.69	61.06	89.86
Occupants (per 1/10 person)	350.00	0.42	0.46	0.50	147.00	161.00	175.00
Vinyl PUR Floor Surface	234.79	0.20	0.20	0.20	46.96	46.96	46.96
Valchromat Frame Structure and Seating	2.88	0.87	0.98	0.42	2.51	2.82	1.21
Wool Fibre Upholstery	12.60	0.88	0.96	0.93	11.09	12.10	11.72
Acoustic Panelling (Mitesco)	0.70	0.55	0.84	0.89	0.38	0.59	0.62
Polycarbonate Partition Wall	17.28	0.44	0.53	0.78	7.60	9.16	13.48
Occupants (per 1/10 person)	35.00	0.42	0.46	0.50	14.70	16.10	17.50
Walls New	16.44	0.34	0.43	0.68	5.59	7.07	11.18
Room Vinyl PUR Floor Surface		0.30	0.30	0.30	23.40	23.40	23.40
	Surface Vinyl PUR Floor Surface Valchromat Frame Structure and Seating Wool Fibre Upholstery Acoustic Panelling (Mitesco) Polycarbonate Partition Wall Occupants (per 1/10 person) Vinyl PUR Floor Surface Valchromat Frame Structure and Seating Wool Fibre Upholstery Acoustic Panelling (Mitesco) Polycarbonate Partition Wall Occupants (per 1/10 person) Walls New	SurfaceTotal (sq. m)Vinyl PUR Floor Surface696.00Valchromat Frame Structure and Seating57.60Wool Fibre Upholstery20.16Acoustic Panelling (Mitesco)41.98Polycarbonate Partition Wall115.20Occupants (per 1/10 person)350.00Vinyl PUR Floor Surface234.79Valchromat Frame Structure and Seating2.88Wool Fibre Upholstery12.60Acoustic Panelling (Mitesco)0.70Polycarbonate Partition Wall17.28Occupants (per 1/10 person)35.00Walls New16.44	Surface Total (sq. m) 500 Vinyl PUR Floor Surface 696.00 0.20 Valchromat Frame Structure and Seating 57.60 0.87 Wool Fibre Upholstery 20.16 0.88 Acoustic Panelling (Mitesco) 41.98 0.55 Polycarbonate Partition Wall 115.20 0.44 Occupants (per 1/10 person) 350.00 0.42 Vinyl PUR Floor Surface 234.79 0.20 Valchromat Frame Structure and Seating 2.88 0.87 Wool Fibre Upholstery 12.60 0.88 Acoustic Panelling (Mitesco) 0.70 0.55 Polycarbonate Partition Wall 17.28 0.44 Occupants (per 1/10 person) 35.00 0.42 Walls New 16.44 0.34	Surface Total (sq. m) 500 1000 Vinyl PUR Floor Surface 696.00 0.20 0.20 Valchromat Frame Structure and Seating 57.60 0.87 0.98 Wool Fibre Upholstery 20.16 0.88 0.96 Acoustic Panelling (Mitesco) 41.98 0.55 0.84 Polycarbonate Partition Wall 115.20 0.44 0.53 Occupants (per 1/10 person) 350.00 0.42 0.46 Vinyl PUR Floor Surface 234.79 0.20 0.20 Valchromat Frame Structure and Seating 2.88 0.87 0.98 Wool Fibre Upholstery 12.60 0.88 0.96 Acoustic Panelling (Mitesco) 0.70 0.55 0.84 Polycarbonate Partition Wall 17.28 0.44 0.53 Occupants (per 1/10 person) 35.00 0.42 0.46 Walls New 16.44 0.34 0.43	Surface Total (sq. m) 500 1000 2000 Vinyl PUR Floor Surface 696.00 0.20 0.20 0.20 Valchromat Frame Structure and Seating 57.60 0.87 0.98 0.42 Wool Fibre Upholstery 20.16 0.88 0.96 0.93 Acoustic Panelling (Mitesco) 41.98 0.55 0.84 0.89 Polycarbonate Partition Wall 115.20 0.44 0.53 0.78 Occupants (per 1/10 person) 350.00 0.42 0.46 0.50 Vinyl PUR Floor Surface 234.79 0.20 0.20 0.20 Valchromat Frame Structure and Seating 2.88 0.87 0.98 0.42 Wool Fibre Upholstery 12.60 0.88 0.96 0.93 Acoustic Panelling (Mitesco) 0.70 0.55 0.84 0.89 Polycarbonate Partition Wall 17.28 0.44 0.53 0.78 Occupants (per 1/10 person) 35.00 0.42 0.46 0.50 Walls New 16.44	Surface Total (sq. m) 500 1000 2000 500 Vinyl PUR Floor Surface 696.00 0.20 0.20 0.20 139.20 Valchromat Frame Structure and Seating 57.60 0.87 0.98 0.42 50.11 Wool Fibre Upholstery 20.16 0.88 0.96 0.93 17.74 Acoustic Panelling (Mitesco) 41.98 0.55 0.84 0.89 23.09 Polycarbonate Partition Wall 115.20 0.44 0.53 0.78 50.69 Occupants (per 1/10 person) 350.00 0.42 0.46 0.50 147.00 Vinyl PUR Floor Surface 234.79 0.20 0.20 0.20 46.96 Valchromat Frame Structure and Seating 2.88 0.87 0.98 0.42 2.51 Wool Fibre Upholstery 12.60 0.88 0.96 0.93 11.09 Acoustic Panelling (Mitesco) 0.70 0.55 0.84 0.89 0.38 Polycarbonate Partition Wall 17.28 0.44 0.53	Surface Total (sq. m) 500 1000 2000 500 1000 Vinyl PUR Floor Surface 696.00 0.20 0.20 0.20 139.20 139.20 Valchromat Frame Structure and Seating 57.60 0.87 0.98 0.42 50.11 56.45 Wool Fibre Upholstery 20.16 0.88 0.96 0.93 17.74 19.35 Acoustic Panelling (Mitesco) 41.98 0.55 0.84 0.89 23.09 35.26 Polycarbonate Partition Wall 115.20 0.44 0.53 0.78 50.69 61.06 Occupants (per 1/10 person) 350.00 0.42 0.46 0.50 147.00 161.00 Vinyl PUR Floor Surface 234.79 0.20 0.20 0.20 46.96 46.96 Valchromat Frame Structure and Seating 2.88 0.87 0.98 0.42 2.51 2.82 Wool Fibre Upholstery 12.60 0.88 0.96 0.93 11.09 12.10 Acoustic Panelling (Mitesco)

Table 5.10 Proposed Reverberation Times

		Proposed	Reverberation Times	S		Room Volume
Building Area	Reverberation Time	Room Volume	Frequency	Effective Surface Area Total	Sabine Value	Total Volume
Part 1	0.79	3079.20	500	630.60	0.161	3079.2
Part 1	0.75	3079.20	1000	660.31	0.161	3079.2
Part 1	0.74	3079.20	2000	666.72	0.161	3079.2
Part 2	0.49	396.90	500	131.01	0.161	396.9
Part 2	0.50	396.90	1000	128.73	0.161	396.9
Part 2	0.52	396.90	2000	122.19	0.161	396.9
Test room	0.75	210.60	500	44.93	0.161	210.6
Test room	0.77	210.60	1000	43.84	0.161	210.6
Test room	0.76	210.60	2000	44.64	0.161	210.6

Analysis and Iteration

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Page 14



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Phase 3: Technical Strategies

+ Materials Strategy:

Materials chosen need to fulfil both the rollout and the behaviour strategies Materials chosen need to provide the user comfort and make them feel welcome. Materials used need to provide user with a certain sense of luxury but without thinking that their 'tax money' is being wasted unnecessary splurges.

Due to the nature of the service provider, materials also need to provide for the heavy foot traffic that the building has. Materials need to withstand these elements and be as robust and maintenance free as possible in order to sustain the feeling of efficiency. As soon as the interior elements start looking dirty and unmaintained the general feel of efficiency will decline to.

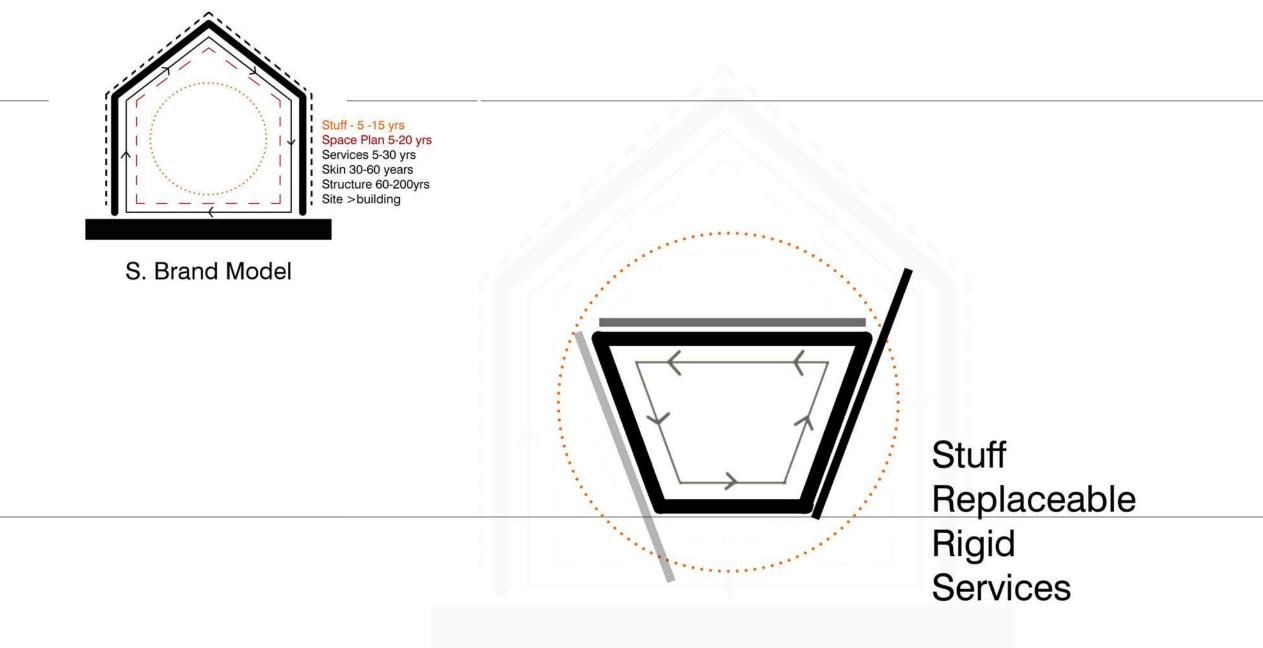
In terms of lifespan Materials need to relate back to the host building. In the case of Tshwane licencing department there it shows that in a short timespan a building can become irrelevant. This building is only 14 years old but due to the rapid exponential change in technology it has allowed the building to become barely functional.

S. Brands 6'S diagram was studied and it brought light that this similar sort of process can be implemented but on a much smaller scale. Using the same thought process, that each element has a date, the interior system can be placed on a timeframe and this can indicate the maintenance and up keep of the interior. What this proposes is that the lifespan of the interior system is flexible. Therefore a system where surfaces can change and be replaced is needed.

Designed elements are therefore made up of a frame and replaceable surfaces. Surfaces that are used by many users and need to be of a softer material in order to be comfortable are surfaces that will be replaced after a certain time. The rigid frame will stay in place and a new surface will just be added.

Materials lifespan also need to relate back to the host building as well as technological advances. "There has been more technological improvement in the last 50 years than in the previous 5, 000," asserts Patrick Cox, co-editor of Technology Profits Confidential (Bowman 2010). In the case of Tshwane licensing department there it shows that in a short timespan a building can become irrelevant. This building is only 14 years old but due to the rapid exponential change in technology it has allowed the building to become barely functional.

For this reason the design proposal should have a measured lifecycle. Therefore Materials used need to be recyclable or biodegradable.



Plug In-terior Model

Figure 5.66 Material Strategy



Table 5.11 New Materials Schedules

New Material:	Recyclable?	Lifespan Element	Acoustic performance	Reflectance	Thermal	Translucent	Durabilty	Fire	Available close to site?	Easy to obtain	Supplier	Ease of Manufacture
MDF- valchromhat	No, but it is biodegradable	Rigid Frame (5 years)	Average	Matt Finish	Good Insulators	No	Good	Class A Fire Resistance	Yes	Yes	45km	Yes
Polycarbonate	Yes	Rigid Frame (5 years)	Average	Yes	Good Insulator	75-85%	Good	(SANS) T	Yes	Yes	29km	Yes
Steel	Yes	Rigid Frame (5 years)	Poor	Brushed Finish	Poor Conductor	No	Good	Non-Flammable	Yes	Yes	10km	Yes
Aluminium	yes	Rigid Frame (5 years)	poor	Brushed Finish	Good Conductor	No	Good	Non-Flammable	Yes	Yes	10km	Yes
Vinyl PUR Flooring	yes	Rigid Frame (5 years)	IMPACT SOUND REDUCTION EN ISO 10140-3 9dB	No	Good Insulator	No	Good	(SANS)	Yes	Yes	35km	Yes
Wool Fibre	Yes - Rapidly renewable and compostable	Replaceable	Very Good	No	Good Insulator	No	Good	Fire Resistant	Yes	Yes	30km	Yes
Laminated Saftey Glass	yes	Rigid Frame (5 years)	Poor	Yes	Poor Insulator	Yes	Good	Non-Flammable	Yes	Yes	10km	Yes
Galvanised Steel Sheets	Yes	Rigid Frame (5 years)	Poor	No	Poor Conductor	No	Good	Non-Flammable	Yes	Yes	10km	Yes
Powder Coated Steel	Yes	Rigid Frame (5 years)	Poor	No	Poor Conductor	No	Good	Non-Flammable	Yes	Yes	10km	Yes
Recycled Polyester Acoustic Panels	YES	Replaceable	Excellent	No	Good insulator	No	Average	Fire Resistant	Yes	Yes	35km	Yes
Pine worksurafces	Biodegradeable	Replaceable	Average	No	Good insulator	No	Average	Flammable	Yes	Yes	5km	Yes

+New Materials Section Scale 1:20

Figure 5.67 New Materials Section (Scale 1:20)

+Safety Strategy

The design proposal needs to 'plug in' to existing buildings safety protocols. In terms of the Centurion Licensing Department these are not very clear and therefore a fire safety strategy is needed.

For Occupation G1 the building has been divided into four zones according to SANS Part T (4.4). The Roll out strategy can't provide a fixed automatic fire extinguishment installation and therefore the building is divided up into floor areas of not more than 5000m². Escape routes are allocated to each of these zones. Circulation and waiting areas were designed around the minimum requirement as stated in Part S. The floor plan allows clear pathways to each Emergency exit.

The Cable tray is located to be the central spine of the building. Emergency signage is mounted on the cable tray as important information should be placed perpendicular to user movement. The lighting suspended from the cable tray is also connected to an power source independent of the mains supply. Materials are chosen to comply with SANS in terms of their structural stability.

Evacuation Signage is placed PERPENDICULAR to movement in circulation areas.

-Materials

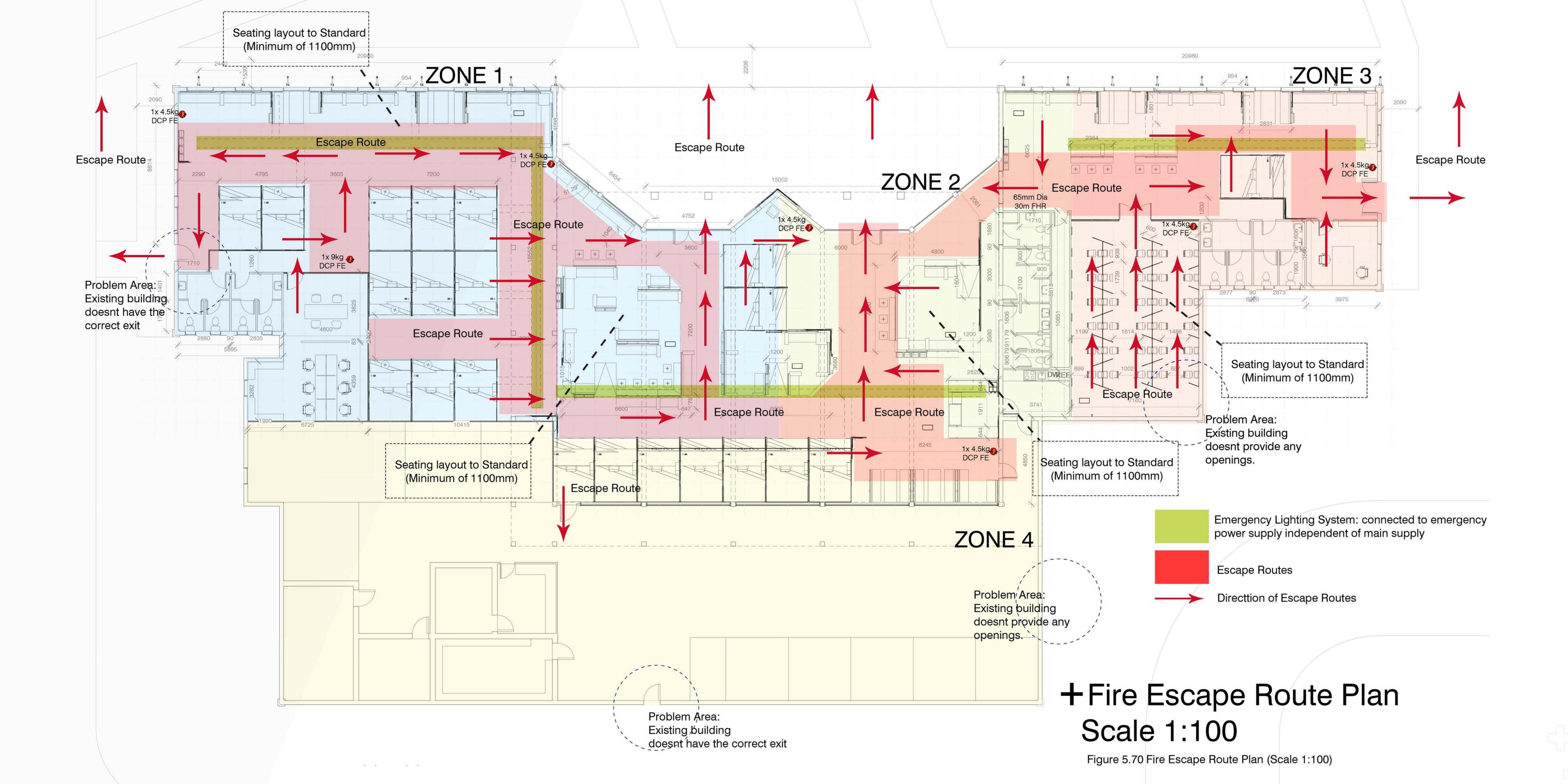
-Products

Fire safety needs to be considered early in phase 1 of planning. An open circulation of minimum 1100mm was considered in the intitial stages of space planning.

Materials need to maintain structural stabilty for 30min [as per SANS Part T for Occupation G1]

Supply new 4.5kg Dry Chemical Fire Extinguishers [1 per 200m² as per SANS Part T for Occupation G1].

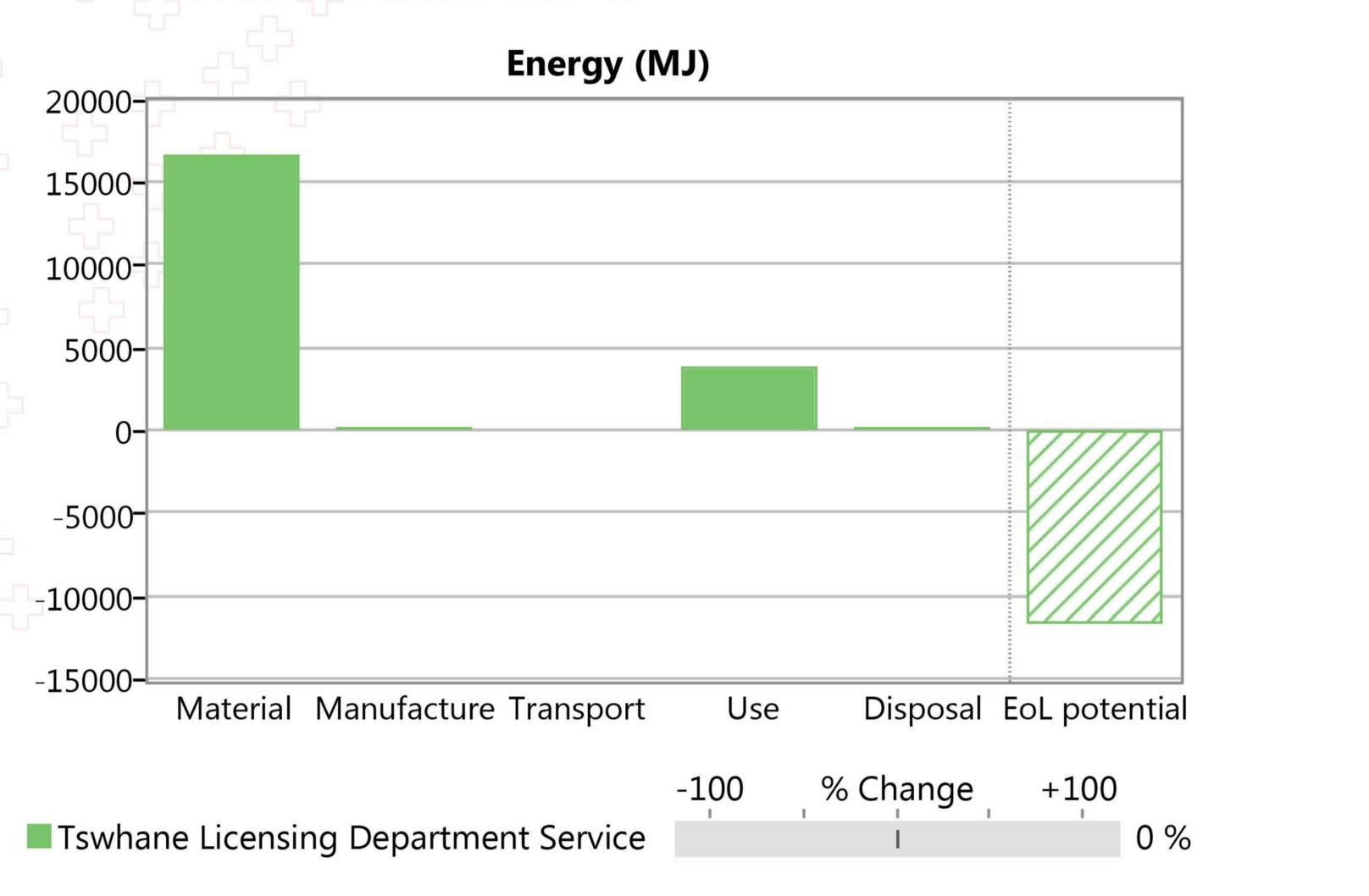
Figure 5.66 Safety Strategy



Assembly Point

"Plug in" Fire Safety

ECO AUDIT SUMMARY GRAPHS



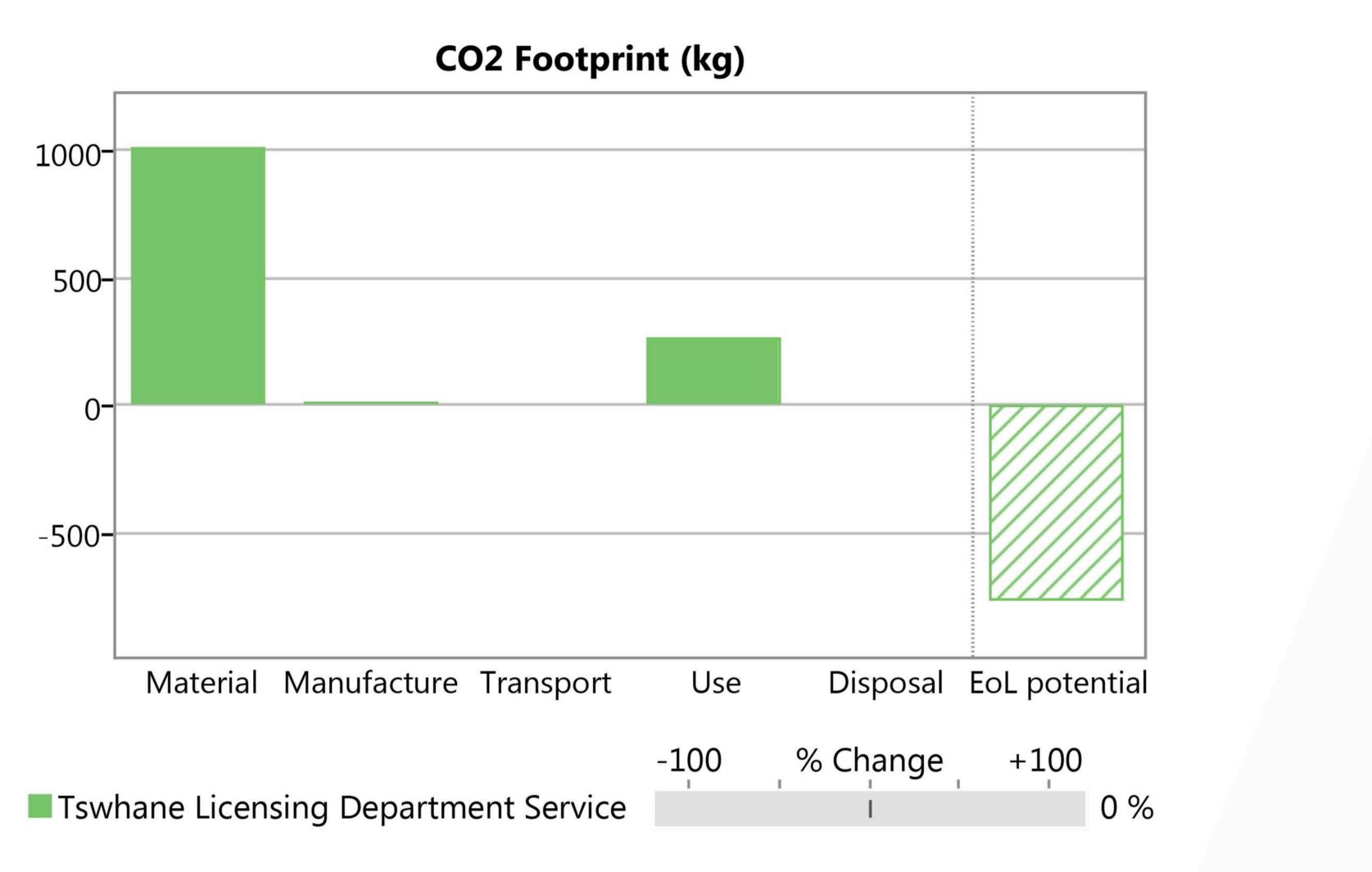
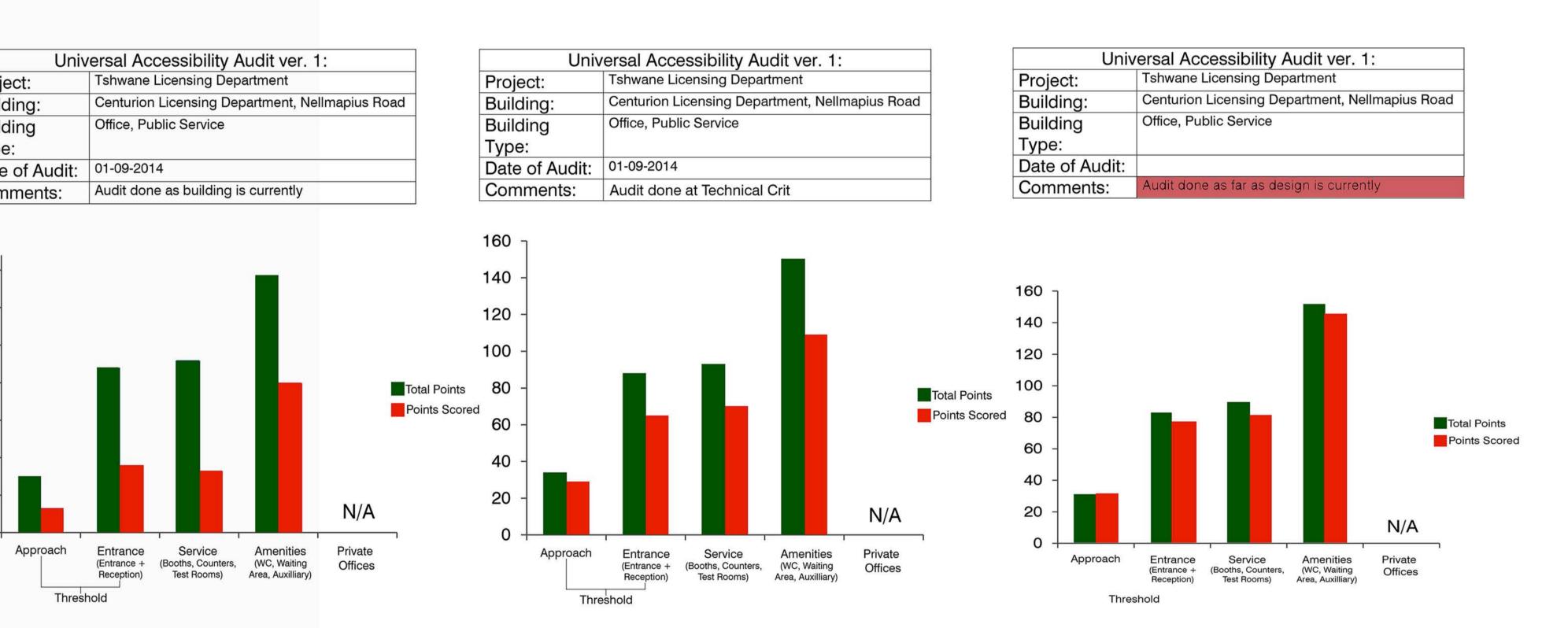
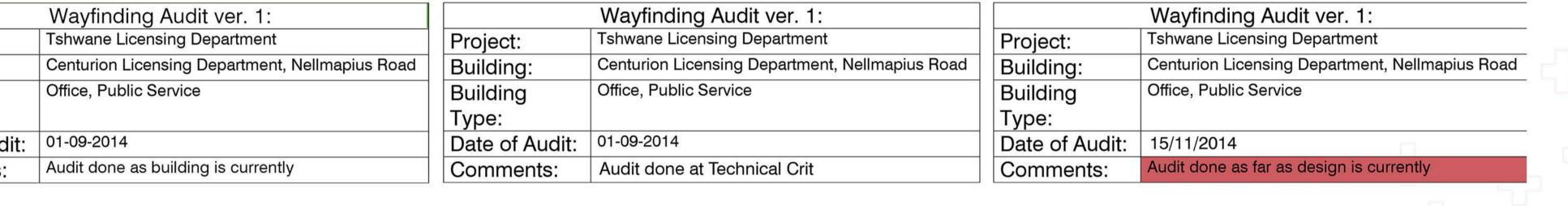


Figure 5.68 Eco Audit on Materials

+Wayfinding Audit Tool Developed for Public Service Buildings



+Universal Access Audit Tool Developed for Public Service Buildings



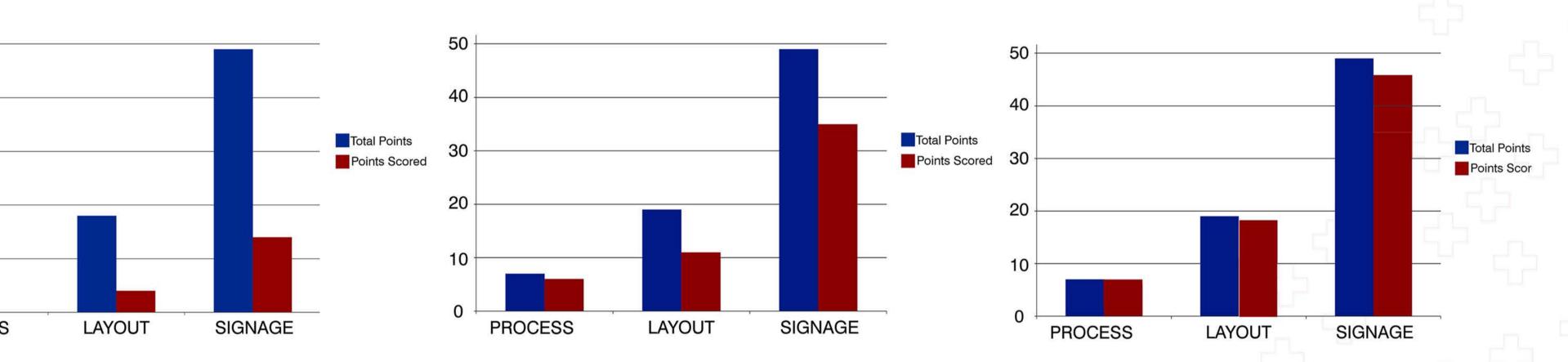


Figure 5.71 Wayfinding Audit

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Page 16

Plug In-terior: The Centurion Licensing Department







+NEW WAITING AREA

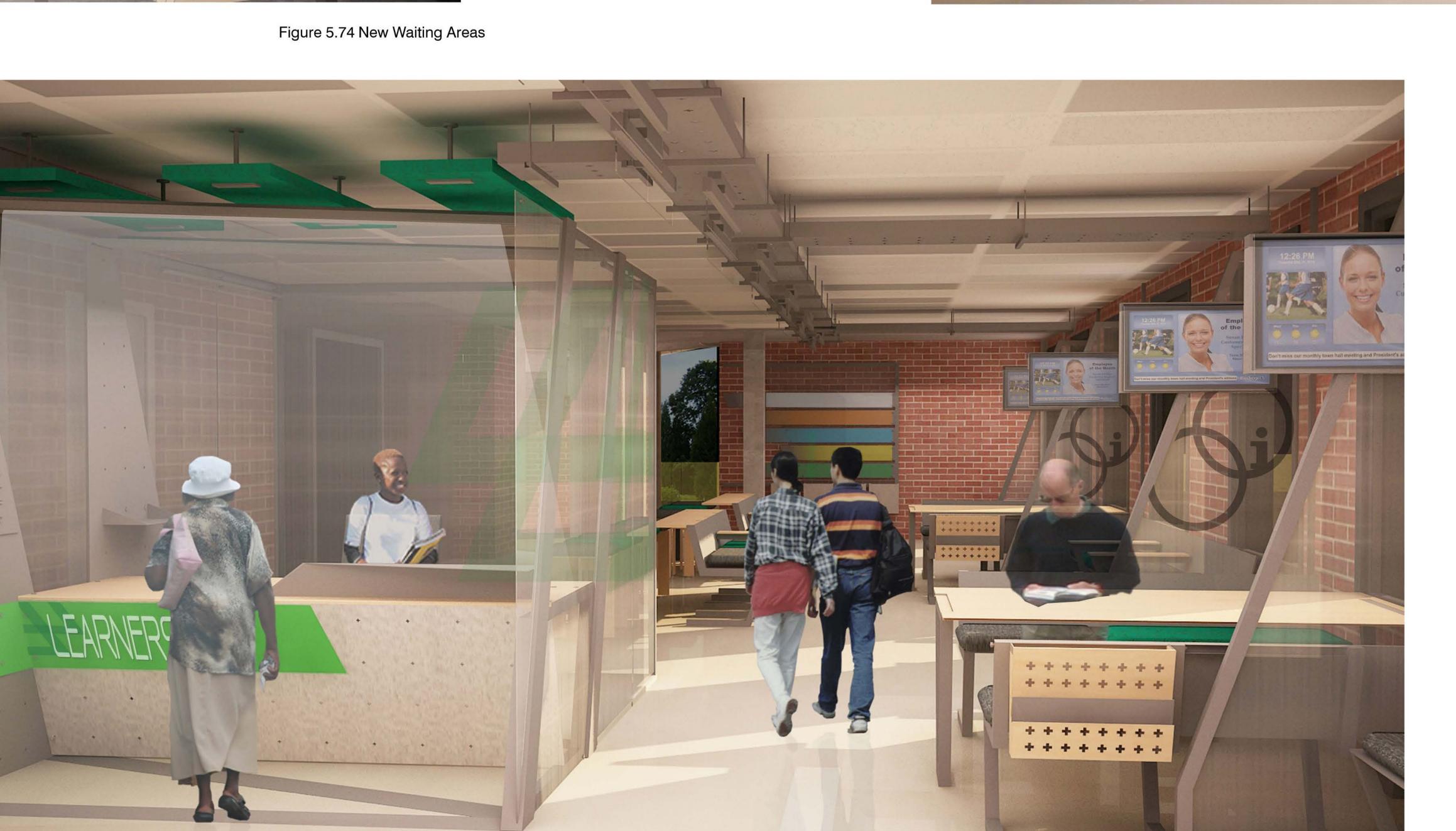


Figure 5.77 New Thresholds: Test Reception



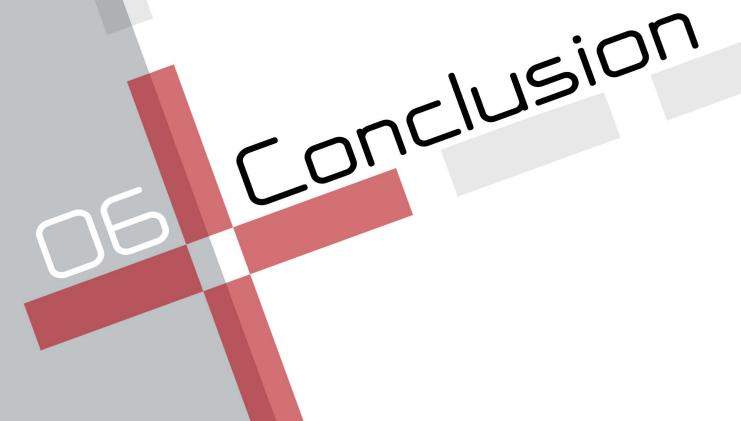
Figure 5.75 New Service Booths

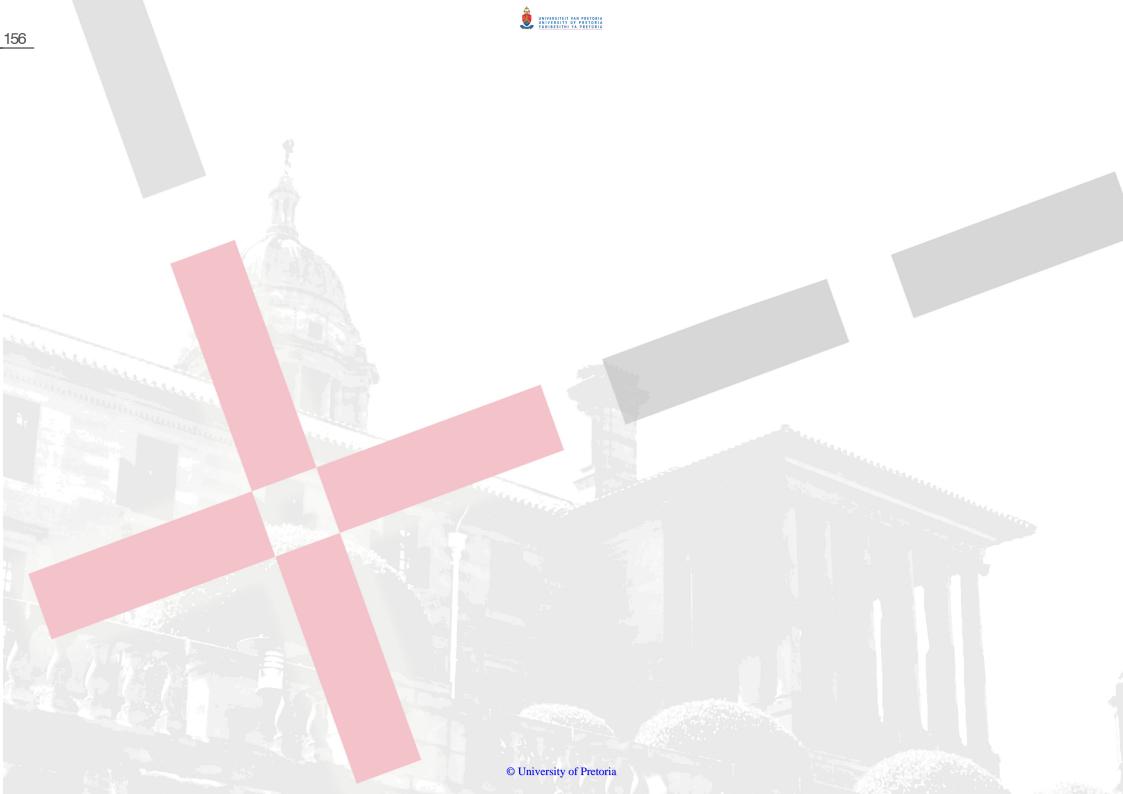
+NEW RECEPTION



+NEW SERVICE BOOTHS









This project highlights the strategic interventions that can be done on an intimate interior scale in order to improve how outdated buildings can connect with current people. It highlights that even in this very technologically driven world, where people don't physically meet anymore, there are still moments of interaction that need to be designed correctly in order to still be enjoyed. Unfortunately one of these moments that is overlooked is service delivery and therefore the significance is much greater.

The design proposal had very distinguished deliverables from the start and these were met through combining the analysis from the four chosen sites as well as human-centred driven theory in order to get a very clear understanding of where the problems are and how to approach them from a user comfort point of view.

Design Thinking allowed for an approach that diverged into other fields of design such as service design and information design. This allowed for stronger strategies to be developed as each discipline provided a way of finding, and solving problems within the Tshwane Licensing Department sites, mainly in the Centurion Department.

Strategies were developed around the findings from the analysis and theoretical stance. These strategies developed the concept into a design and applied the design through technification. This process allowed design guidelines to form and there is great potential for this to develop further in order to make user behaviour within an interior a physical parameter.

The proposed design is a universal solution to all four sites of the Tshwane Licensing Department (Centurion, Waltloo, Akasia and Rayton). The project can be divided into sums of its whole according to the site specific need. Site specific flaws and opportunities can also be taken into consideration through the adaptability of the design. It is a flexible system.

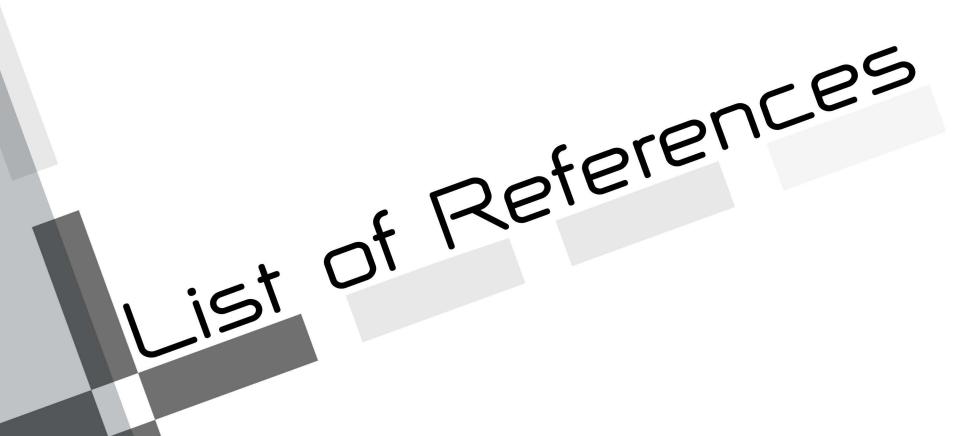
What this investigation uncovered was a need to maintain existing buildings, as the advances that we as a society are making are rendering older buildings irrelevant at a much faster rate. Therefore solutions need to develop to counteract this dilemma. The stance that was taken in this proposal was to develop an interior system that's lifecycle matched the fast past phenomenon that is the exponential development of technology. Once the interior system is no longer valid the materiality allows for re-use or recycling.

The contributions made to interior design include the different approach used in site analysis. Information design and service design contributed greatly in the formation of a graphic and analytical stream of information. Incorporating principles from other disciplines into interior design can greatly influence the way it communicates to the layman.

The design guidelines can be investigated further in terms of creating cooperative interiors. This project focused on what causes an uncooperative interior and developed the design guidelines as a basis to the problem. These can be investigated further in terms of public service buildings on a broader spectrum.









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APPendices



Appendix A: Final Renders



NEW RECEPTION





NEW WAITING AREA





NEW CASHIERS





NEW SERVICE BOOTHS

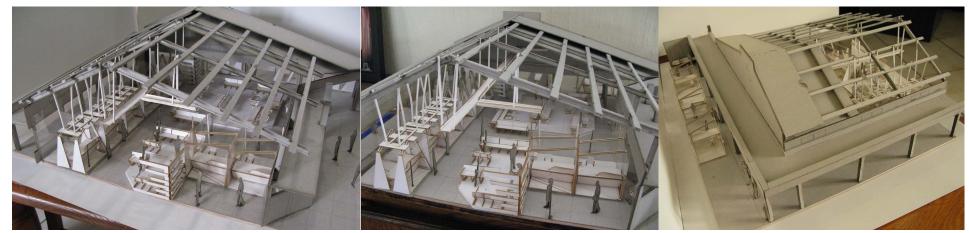


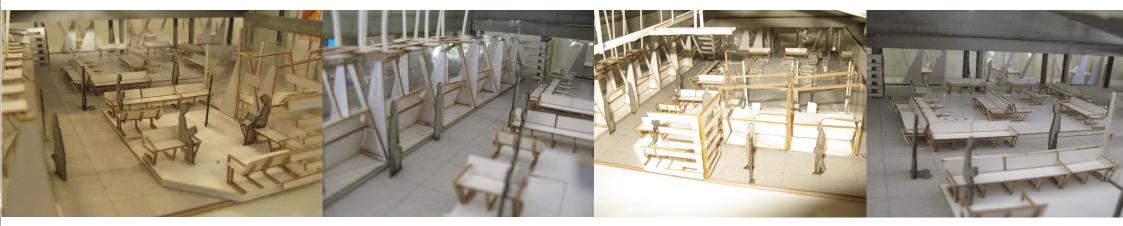


NEW THRESHOLDS: TEST RECEPTION

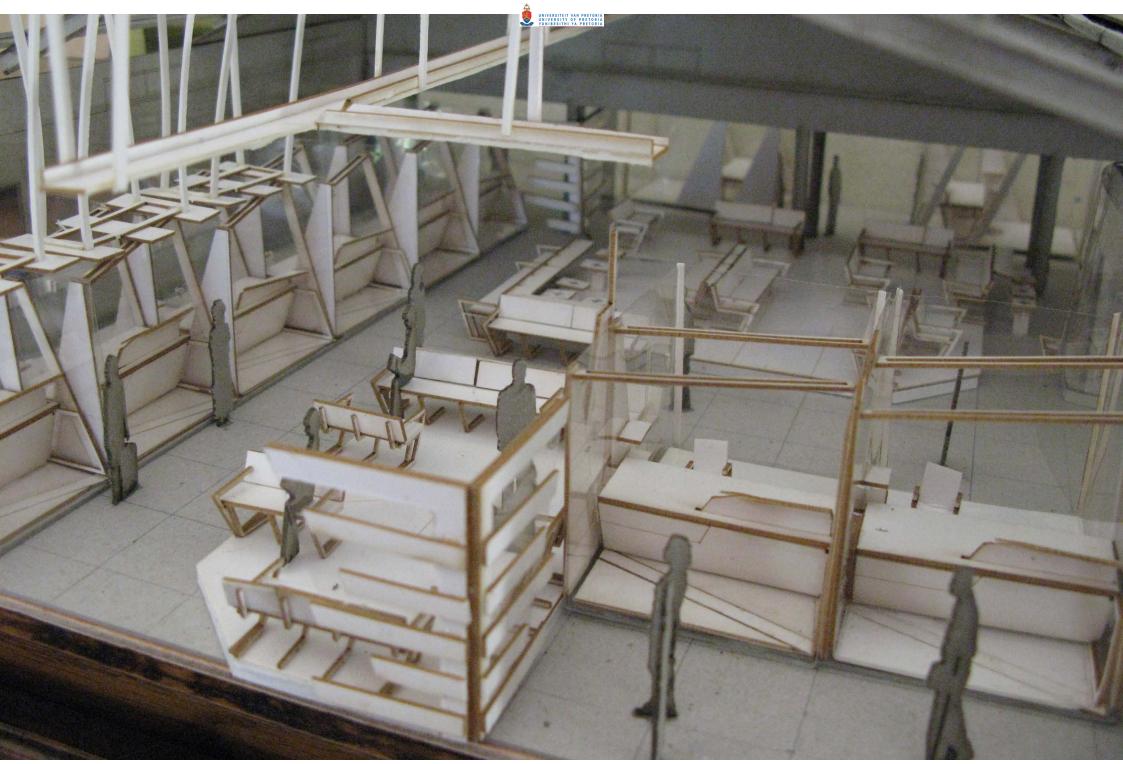


Appendix B: Final Models



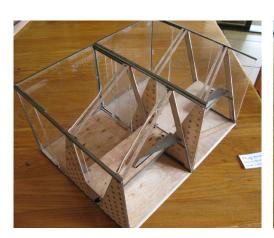






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PLUG IN-TERIOR SERVICE BOOTHS_SCALE 1:10











	Centurion (Tshwane)	Waltloo (Tshwane)	Akasia (Tshwane)	Rayton (Tshwane)
GRADE:	Α	Α	E	В
Visit:	Throughout 2013 10/02/2014	27/02/2014 12:15	27/02/2014 11:00	27/02/2014 09:00
Access				
Is the identifiable from the main street?	No. No signage on street or at main intersection	Inadequate. There is only signage from one side of the road.	No, no signage on street or at main intersection	Yes, there is sufficient road signage
N=0 ; Y=1	0	0	0	1
Is there accessible, safe and convenient parking?	Yes. Building is in a municipal complex with ample parking and car guards.	Yes. Building is in a municipal complex with ample parking.	Yes. Building in a centrum with car guards and ample parking.	No, parking available outside of gated complex. No Car guards. No Accessible Parking near the building.
N=0 ; Y=1	1	1	1	0
Is there sufficient information on how to access building?	No. Car guards have to tell visitors where to go.	No.	No, signage only available in terms of a faded sign on the building.	No, the building is split in two. The enquiries desk is in the building that you access second.
N=0 ; Y=1	0	0	0	0
Are the functions of the building interior visible from the exterior?	No. Front of the building is fenced off.	No. There are two entrance doors and neither provide any indication of their purpose.	No. Windows are covered.	No, functions are unclear from the outside.
N=0 ; Y=1	0	0	0	0
Is the entrance welcoming?	No. Security guards are at the front of the building with forms but are unfriendly.	No. There is a single security guard that is supposed to inform you of the process. (He was on his cell phone). Fencing makes you feel unwelcome.	No.	No, no staff or signage to welcome you.
N=0 ; Y=1	0	0	0	0
Circulation				
Is the service process easy to follow?	No.	No.	No. However there are signs that demarcate the	No. PROCESS IS UNCLEAR!



			areas.	
N=0 ; Y=1	0	0	0	0
Is there congestion or crowding within the interior?	Yes.	No. Most of the waiting is done outside of the building. Visitors are taken in batches.	Yes. Interior is spacious yet where seated waiting areas are there is not enough seats causing congestion.	Queuing fills the entire interior of building 1. Therefore users are unsure where to join the queue.
N=1; Y=0	0	1	0	0
Does queuing allow for congestion?	Yes.	Yes. Cashier counters are not given enough waiting space.	Yes. Queuing is the only factor that leads to congestion. Queues form in different areas that don't provide flow.	Yes. Queuing is the main reason for congestion.
N=1; Y=0	0	0	0	0
Is there signage that helps with circulation?	No.	No.	Yes. BUT its placement is problematic. Its A3 size and stands up from the floor. Therefore not visible when people stand in front of it.	No.
N=0 ; Y=1	0	0	1	0
Does the interior provide any information towards the processes to be followed?	No. Users "follow the leader".	No.	No. Although it has a very spacious layout there is no clear process.	No.
N=0 ; Y=1	0	0	0	0
Does the circulation provide accessibility to all?	No.	No.	No. Seated waiting areas are fixed therefore making it difficult for wheelchair users to join the queue.	Yes, to an extent.
N=0 ; Y=1	0	0	0	1
Layout				
Does the layout of the services providers compliment the circulation through the building?	No.	No.	No.	No. The enquiries counter is situated in front of a door and this blocks the entrance. Queuing for eye tests happens outside into a road and users always need to move out the way

N=0 ; Y=1	0	0	0	0
Are the service providers easy to access?	No. Security guards are the only access to information (4 throughout the building).	No. Security guard is the only point to access information.	No. There is an unused info counter. There is one security guard at the entrance to provide help.	No. Users need to queue in order to reach anyone for information.
N=0; Y=1	0	0	0	0
How does the position affect the interior?	Positioning of the service counters don't provide flow in terms of the process.	Positioning of the service counters don't provide flow in terms of the process.	The service counters are on one side of the building and queuing happens on the other, this causes congestion on the queuing side. See diagram.	The layout provides confusion. See diagram.
Furniture				
Is furniture accessible to all?	No. There are no wheelchair accessible service counters.	No. There are no wheelchair accessible service counters.	No. There are no wheelchair accessible service counters.	Yes. However there is not enough and therefore people have to stand for long periods.
N=0 ; Y=1	0	0	0	1
Is furniture clean?	No	Yes.	Yes.	No.
N=0 ; Y=1	0	0	1	0
Is Furniture comfortable?	No. Steel benches to wait on outside of the building.	No. Steel benches to wait on outside of the building.	Average	Average
N=0 ; Y=1	0	0	1	1
Counters	Wooden writing counters, wooden service counters.	Wooden writing counters, wooden service counters.	Veneered chipboard writing and service counters.	Wooden writing counters, wooden service counters.
Waiting Areas	Moveable upholstered chairs	Moveable upholstered chairs	Fixed plastic chairs	Plastic Chairs
Testing Areas	Small wooden desks with moveable chairs.	No access yet to this area.	Plastic chairs at wooden desks.	Plastic Chairs
Tasks				
Is the sufficient space to complete the task provided -Visitor -Employee	No. Corridor between eye test booths and finger print station make it very uncomfortable to do these.	No. Interior not very spacious. Three people in a queue causes congestion. (Therefore people have to wait outside)	Yes.	There is not enough writing space to fill in forms. Not enough comfortable waiting areas.
	No. Service cubicles are too	Yes. Service cubicles are	Yes.	Eye test room is very small.



	small.	joined and open instead of		Service cubicles are small.
		divided.		
N=0 ; Y=1	0	1	1	0
Is the sufficient light to complete the task provided -Visitor -Employee	Yes. Fluorescent interior lighting.	No. Interior is very dark.	Yes. Fluorescent interior lighting.	Building one has sufficient lighting. Yet light at counters is not enough. Building two is too dark. (Users find the light change challenging when doing an eye test)
	No. Especially in the private offices due to no openings (for security reasons)	No. Interior is very dark.	Yes. Fluorescent interior lighting.	Building one has sufficient lighting. Building two is too dark.
N=0 ; Y=1	(for security reasons)	0	1	0
•		0	•	
Is the sufficient acoustic control to complete the task provided	No. Visitors and service providers have to shout to hear through security glass.		Yes.	Building one – the general background noise is too loud.
-Visitor	No. Background noise from	No. the cubicles are joined	Yes.	Building one – the general
-Employee	public interior make it difficult to hear in service booth.	so there is no sound barrier between service providers.		background noise is too loud as service providers have to shout answers at users.
N=0; Y=1	0	0	1	0
Is the sufficient technology to complete the task provided -Visitor -Employee	No. No photocopiers or ATM. ID photos no longer on site.	No. No photocopiers or ATM.	No.	No. There is a ticket number machine but it is not working. ID Photos are on a different site. No photocopiers or ATM.
	Yes. According to the minimum requirements in No 93 the technology is sufficient.	Yes. According to the minimum requirements in No 93 the technology is sufficient.	Yes. According to the minimum requirements in No 93 the technology is sufficient.	Yes. According to the minimum requirements in No 93 the technology is sufficient.
N=0 ; Y=1	0	0	0	0
Is the sufficient information to complete the task provided	No. No information on process. There are two information desks that are	No. Users in eye test queue don't realise there are two different queues. All	No. Security guard sits at a small desk at the door with the forms. Lots of users	No. There is no signage. Forms are difficult to understand.



-Visitor -Employee	never in use.	signage are A4 pages stuck with cellotape.	walk straight past her and enter confused.	Too often the enquiries desk was unattended.
	No. Eye testing machines are outdated. Learners test are still manually done.	Yes.	Yes.	Yes.
N=0; Y=1	0	0	0	0
Interior Environment				
Is there enough natural light in the interior?	No.	No.	No.	Yes at the enquiries counter. No at cashier counters. No in eye test building.
N=0 ; Y=1	0	0	0	1
What is the nature of the existing sunlight/daylight?	Only through the front doors and windows. The back of the building is dark.	All windows are tinted and covered with blinds.	The building has great potential in terms of natural light however the entire glass façade is closed off with blinds.	Only appears through glass door and frosted windows. Early in the day is enough but when the sun moves during the day it won't be enough.
Is there enough natural ventilation in the interior?	No. ACs are also broken.	No. Ventilation is provided with an AC.	No. Building is hot and stuffy. AC's are out of order and dripping water in the interior.	B1- Yes if the door is open. There is no cross ventilation. B2- There is no cross ventilation.
N=0 ; Y=1	0	0	0	0
Is the interior thermally comfortable?	No.	Yes.	No.	Yes
Is there an odour to the building?	No.	No. Building is clean.	No. Building is clean but does not feel fresh.	No
N=1; Y=0	1	1	1	1
Are there views or connections to the exterior?	No.	No. Only connection is when physically waiting outside.	No.	No. Only through the doorway.
N=0 ; Y=1	0	0	0	0
Does the surrounding environment affect the interior?	No. The exterior is well maintained compared to interior. Landscape is a	No. There is lots of open space.	Yes. The surrounding landscape is not well maintained and sets	Yes. The surrounding landscape is not well maintained and sets



	pleasure to look at.		negative expectation for the interior	negative expectation for the interior		
Service						
How fast to customers get served?	Eye Test – 15 people are allowed into the building at one time, there are 2 eye test booths operational meaning that each batch will be processed in +-40mins as each test takes 6 mins. This does not include the time needed to queue outside which is also 40 mins per 15 people.	Out of seven eye test booths only two were in operation. These had slow rotation. There were 10 people inside the building which means once they were in the building the queue would rotate in less than an hour, however the queue outside the building was just as long resulting in an hours wait both outside and inside the building	Eye Test – on average there were 50 people seated in the queue, the test lasts 5 mins and there were 2 Eye test booths working, therefore the waiting period was +- 1.5 hours for the test. Cashier - on average there were 40 people in the que, the process took 4 mins and there was 1 cashier working, therefore the waiting period was +- 1 hour and 10mins.	B1- 7min at enquiries counter B2- Queue moves 1/3 of the way every 30min		
How do customers and employees communicate?	It is very difficult for employees and customers to communicate through the safety glass at counters		Average. Users can see the end result of their queuing and therefore understand the wait.	Employees are indifferent. Employees often found shouting through the glass at visitors which is not helpful.		
How often do customers ask for help?	Often. There are more security guards that provide help in this building.	Often.	Very often. Also amongst each other as the only form of info is the guard right at the door.	All the time. Mostly other visitors because there is no easy access to staff.		
Are staff helpful?	Yes. Security guards are not friendly.	Yes. The security was brash but gave the necessary information.	Yes.	No.		
N=0; Y=1	1	1	1	0		
Building						
What is the current structural system?	Single storey face brick building. Aluminium framed doors and windows. IBR sheet roof. Interior consists of both non-structural face	Plastered exterior walls. Double storey building. Interior consists of drywall partitioning.	Face Brick. Licencing department occupies a single floor. There is a 500mm level change in the building. Façade is made	Single storey face brick building. Aluminium framed doors and windows.		



	brick walls and drywall		up of brick columns with	
	partitioning. There is a		aluminium framed glass	
	concrete gutter that runs		doors and windows. Interior	
	along the centre of the		consists of drywall	
	double volume room, this is		partitioning.	
	supported by concrete			
	columns.			
What restrictions does the	Concrete columns form a	This is not a heritage	This is not a heritage	This is not a heritage
current structural system	rigid grid right through the	building.	building.	building.
place on future	centre of the building.	It is however part of a	It is however part of a	It is however part of a
interventions?	3	municipal complex of	municipal complex of	municipal complex of
		buildings, all in the same	buildings, all in the same	buildings, all in the same
		style of building.	style of building.	style of building.
Which elements must be retained for future intervention? Which may be removed?	No significant elements.	No significant elements.	No significant elements.	No significant elements.
Materiality				
What is the current	Face brick exterior. Face	Painted and plastered walls	Face brick exterior.	Face brick exterior.
materiality?	brick and plastered and	in both interior and exterior.	Plastered and painted	Plastered and painted
atoriamy i	painted interior.		interior.	interior.
What is the nature, feel of,	Unmaintained and dirty	New and fresh.	Very clinical, provides no	Out of date and dirty.
of the visible finishes?	ommanica and any	Trow and noon.	identity.	Cat of date and anty.
How has the material aged?	Not well. In need of serious	Material is new as it seems	Average.	Not well. In need of serious
Trem has and material agear	maintenance.	the interior has recently	, werager	maintenance.
		been redone.		
Explain Materials:	Ceiling- ceiling tiles with	Ceiling- wooden ceiling with	Ceiling- ceiling tiles with	Ceiling- ceiling tiles with
Ceiling	fluorescent lighting.	fluorescent ceiling light	fluorescent lighting with	fluorescent lighting.
Walls	Walls- Plastered and	fixtures.	frosted covers.	Walls- Plastered and
Floor	painted in yellow (Tshwane)	Walls- tiled halfway,	Walls- Plastered and	painted in yellow (Tshwane)
Fixed Furniture	and beige.	plastered and painted the	painted in blue and beige.	and beige.
Moveable Furniture	Floors- Tiled in a light	rest. Interior partitions are	Floors- Grey vinyl flooring	Floors- Tiled in a light
Signage	brown and green colour.	painted and have a	tiles (not good condition).	brown colour.
	Fixed Furn- Wooden service	clerestory opening at the	Fixed Furn- Veneered	Fixed Furn- Wooden service
	counters are built on top of	top.	chipboard writing and	counters are built on top of
	walls.	Floor- Dark floor tiles	service counters. Plastic	walls.
	Loose Furn- Plastic black	Fixed Furn- Wooden service	chairs for waiting.	Loose Furn- Plastic black



	chairs. Signage- A4 cello taped paper	counters are built into walls Loose Furn- Moveable upholstered chairs Signage- A4 cello taped paper	Loose Furn- Seats, tables and screens in eye test area. Pot plants. Signage- A4 cello taped paper	chairs. Signage- A4 cello taped paper
Safety				
What visible security systems are in place?	There are security cameras on the outside of the building. Security guards are all around the interior. There is burglar proofing.	There is thick glass with cut- out mouth piece at counters. Security cameras are in the building.	There are security cameras, burglar proofing and a visible alarm system.	The only visible safety is the guards at the gate.
Are there escape routes?	No.	No.	Yes. BUT the escape door is behind locked burglar proofing.	No.
What precautions are in place for fire?	Fire Hydrants.	Fire Hydrants.	There are visible fire hydrants.	No.
What precautions are in place for protest?	Building is fenced off within the complex.	Building within the complex is surrounded by fencing and turnstiles to enter.	Burglar proofing.	The complex is gated off, with security guards at that gate.
What precautions are in place for robbery?	There are security cameras on the outside of the building. There is burglar proofing.	Burglar Proofing and cameras.	Alarms, cameras and burglar proofing.	The complex is gated off, with security guards at that gate.

Appendix D: Final Presentation















